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ISSUE 215 CHRISTMAS 1999 £4.20





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A3010 1-2MB	£25	£29.37
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32MB SIMM - Risc PC A7000/+	£59	£69.32
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Ethernet Card A3020/A4k (RJ45 MAU)	£94	£110.45
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StrongARM processor (revT) & RISC OS 3.7	£229	£269.07

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100MB ZIP drive parallel not A300 etc	£109	£128.07
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SCSI ScanExpress 6000	£119	£139.82
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Storm16 SCSI2 i/f - A300/A400 A5/7000	£96	£112.80
Storm16/10BaseT SCSI2 & Ethernet i/f	£148	£173.90
Storm16/Combo SCSI2 & Ethernet i/f	£196	£230.30
StormDMA32 SCSI2 i/f RPC	£128	£150.40

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Hands on

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Reviews

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Education

Next month

Next month's issue sees articles on keeping your old machines running; using TWAIN scanner drivers; creating your own Mailing List; what goes into writing a RISC OS game; and reviews of the 250Mb Zip drive; the Archive CD; 3M's mouse mat; and Castle's new keyboard, plus all the on-going series.

January issue on sale 23rd December











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170MB	£49.00	£57.58	£89.00	£104.57	250MB	£30.00	£35.25	4.3GB	£70.00	£82.25
340MB	£59.00	£69.33	£99.00	£116.32	340MB	£35.00	£41.12	6.4GB	£75.00	£88.12
500MB	£79.00	£92.83	£119.00	£139.83	420MB	£40.00	£47.00	8.4GB	£85.00	£99.87
810MB #	£99.00	£116.32	£125.00	£146.87	500B	£49.00	£57.58	12.9GB *	£95.00	£111.62
1.0Gb #	£109.00	£128.08	£134.00	£157.45	1.2GB *	£95.00	£111.62	16.8GB *	£110.00	£129.25
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3.2GB #	£129.00	£151.58	£155.00	£182.12	3.2GB *	£105.00	£123.37	25.0GB *	£168.00	£197.40
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A30X0 version includes CD ROM i/f which can also be used in A3020 or A4000. For external A3000 i/f add £20.00 +VAT # includes partitioning software

* inc. internal removable HD & CD ROM i/f. For partitioning software only deduct £25.00 + vat (£29.38)

* requires RISCOS 4 or Partitioning s/w for RISCOS 3.5 / 3.6 / 3.7 only £25.00 + vat

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Intel and ARM look to the future

After a long period of uncertainty between the two companies, Intel, which owns the StrongARM variant of the ARM RISC processor, and ARM Ltd have announced that they have jointly forged an agreed roadmap for the future. The news seals the future for StrongARM and ensures that new, faster, versions will be produced, hopefully during 2000.

StrongARM, which can be thanked as the saviour of the Risc PC in the mid-90s, was originally the work of Digital Semiconductor. ARMs have always been impressively quick for their size and lack of complexity, but ARM Ltd made no bones of the fact that it was primarily concerned with the lucrative market for current-frugal battery-powered devices, like mobile phones.

This policy has enabled ARM Ltd to be one of the best performing companies on the stock markets in the last year and the company is now valued at over $3 billion. That's not bad for a chip which was basically designed on a BBC Micro at Acorn in the early 1980s. But RISC OS users needed more power than ARM Ltd could provide with the original ARM600 and 700-series chips. Digital applied their Alpha monster-RISC processor design techniques to the ARM platform and delivered a 200MHz StrongARM, which was over four times more powerful than the fastest ARM700.

Digital, though, was in financial chaos and the company was broken up, with Compaq snapping up its computer products division and Intel acquiring its semiconductor business. For a while, it was feared that StrongARM, which was considered an alien technology by Intel insiders, was to be jettisoned in order to concentrate on the Alpha platform.

But it was soon realised within Intel that StrongARM was, if anything, a more valuable asset than Alpha and so Intel has now swallowed its pride and committed itself to developing StrongARM in co-operation with ARM.

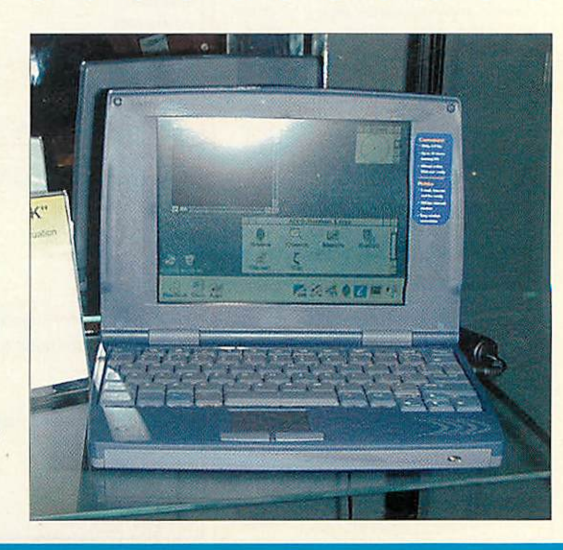
The newly announced deal reveals a licensing agreement which will enable Intel to develop a full range of solutions based on current and future versions of the ARM architecture beginning with version 5TE.

"We believe the ARM architecture has proven itself as a leading processor platform in applied computing and embedded applications. Intel's StrongARM implementation utilises Intel's unique microarchitecture and low power technologies while remaining fully compatible with software available for ARM cores," said Thomas R. Franz, vice president, Computing Enhancement Group, and general manager, Applied Computing Products Division, Intel Corporation. He added: "The high-performance, low-power StrongARM microprocessor family is essential to Intel's success in the portable, handheld and applied computing market segments.

"Intel has joined the growing ranks of companies that have embraced the ARM architecture and the ARM Partnership Model," said Reynette Au, vice president, Worldwide Marketing, ARM, adding: "Intel's technological expertise helps push the envelope of the ARM roadmap. This agreement further validates ARM's acceptance as the architecture of choice in a wide range of high-performance, power-efficient, cost-effective solutions targeting applications such as portable telephony, digital consumer and e-commerce driven, Internet-enabled products."

Intel has confirmed that StrongARM processors are being re-engineered to reach target performance levels of 600 MHz (or an estimated 750 MIPS). That's just what a Risc PC needs!

RISC OS sub-notebook?



Well, not really, but sort of. In fact at the recent RISC OS show in Epsom, RISCOS Ltd had on display a Hewlett Packard StrongARM-based Jornada sub-notebook, which would normally run Windows CE. On its LCD screen instead was a RISC OS desktop. RISCOS Ltd have plans to port RISC OS 4 to machines like the Jornada, but the display machine was a bit of a cheat, simply displaying a picture of a RISC OS 4 screen as it might appear in future. Nevertheless, it was a potent sign that there are plenty of opportunities for RISCOS Ltd, given the opportunity.

RISC OS radar

You may never have heard of Denbridge Digital, but the Merseyside-based company is a long-time user of Acorn technology in its specialised line of high-tech products, including, of all things, radar control systems. In fact we first learned about Denbridge Digital last month when we heard about one of their products, a RISC OS-controlled accident black box recorder system for ferry ships.

What we didn't know then was that several radar systems around the country are controlled using ruggedised Risc PCs and one was on display at the AAUG stand during the RISC OS '99 show at Epsom Race Course. Dr. Colin Wright, Principal Researcher at Denbridge Digital, enthused about the programmability of the host Risc PC.

Although he isn't born and bred on RISC OS, he quickly appreciated its streamlined nature and the manner in which it interfaced with the hardware.

At the show, the demo radar controller was showing a simulated display of a real installation somewhere in the UK. Not only does the equipment display the radar scan, but it can control the strength of the scan, take snapshots and archive too. It's likely that *Acorn User* will be featuring Denbridge Digital in more depth in a future issue of the magazine.





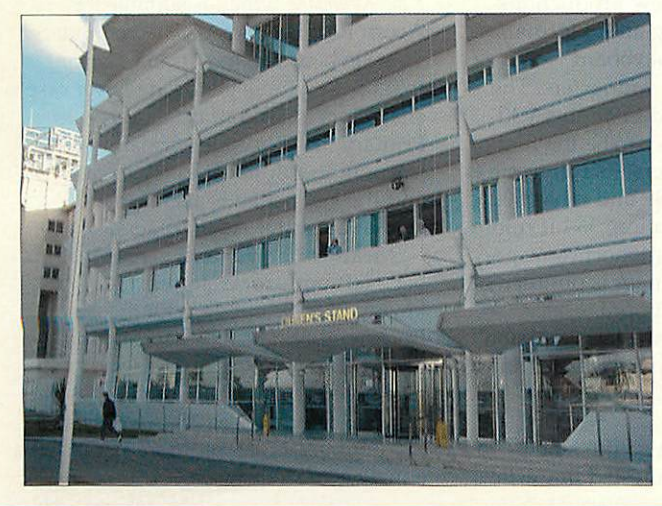
1st RISC OS Show is a success

The first RISC OS Show, organised by the AAUG and the ARM Club, was held over the last two days of October at the novel venue of the Queens Stand at the Epsom Race Course, more readily recognised as the home of The Derby.

Some 1,200 visitors attended the show and while the size of the show was smaller than the Acorn World Show which used to fill this autumn slot, most exhibitors we spoke to were very complimentary. The opening Saturday of the show saw 800 through the doors and the term 'chaotic' was often repeated – not in a negative sense, although it did get a bit crowded, but more because of the enthusiasm of the attendees.

Castle Technology's Jack Lillingston reported that he sold an unexpectedly high number of Risc PCs and that in general perhaps more visitors wanted to buy things than in previous shows – probably because of RISC OS 4 and the general upswing in the market. CJE's Chris Evans also reported that business was brisk, as did Cumana/Cannon Computing's Nigel Cannon. The show venue, in the swish Queens Stand building split the exhibits into upstairs and downstairs levels and the only big complaint from exhibitors was that access for getting up upstairs wasn't ideal.

In all, the RISC OS Show was a success and we all hope and expect it to make a re-appearance next year.



Up-to-date Beeb

As we approach the Millennium, support for the venerable old Beeb soldiers on as the trusty 2MHz 8-bit warhorse nears its 20th birthday.

This month we've heard from R.P. Sprowson, who has made a trio of offerings available for die-hard Beeb users. The first is a Zip file compression utility and what's more, it's free. Secondly, there is a Year 2000 bug fix for BBC Masters – earlier Beebs mostly escape from the Y2K bug as they don't have real time clocks. The fix is a ROM upgrade and adds several new/enhanced commands, including *CONFIGURE TIMEZONE as provided by RISC OS.

The charge for this is a very reasonable £9, inc. postage and a printed manual. Existing users can upgrade to this latest v1.22 by returning their ROM with 2 first class stamps. Finally, there is an updated version of *PICsuite* for RISC OS. *PICSuite* consists of an assembler, disassembler, simulator, programmer, and launcher and the programming hardware for under £100. It now supports both 12- and 14-bit PIC chips, allowing almost all of Microchip's devices to be programmed – including 8-pin ones used in games machines and satellite decoders.

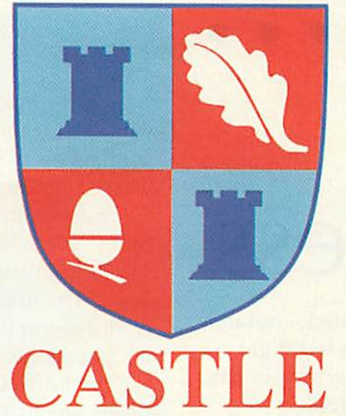
The assembler on its own is available for free down-load. For more information on all these products, check the Web at http://www.sprow.co.uk or e-mail: rps102@york.ac.uk

In good repair

Reflex Electronics

Following on from our feature on them in the November issue of *Acorn User*, Reflex Electronics have announced that they have signed a five year deal with Cabot 2 Ltd (formerly Acorn Computers Ltd) which will see Reflex officially take responsibility for all Acorn-manufactured product warranty work and technical support for the next five years. Cabot 2 is the company which was set up in the aftermath of the splitting up of Acorn between Element 14 and Pace in order to tidy up remaining contractual and logistical obligations.

That term 'Acorn-manufactured' is important. Since shortly after Acorn closed down its Workstation division in 1998, Castle Technology has had exclusive rights to build and distribute Acorn-branded products. Part of Castle's stocks were originally built by, and came from, Acorn, while others were assembled and packaged by Castle.



Original Acorn stock will be covered by warranties which will be honoured by Reflex Electronics, while computers built by Castle are supported by Castle's own scheme. If you are unsure as to which company to approach if you have a warranty enquiry, Reflex Electronics will be able to determine from serial numbers whether or not they are dealing with an Acorn warranty or a Castle warranty.

Reflex Electronics' operations director, David Lumley, commented: "Everyone at Reflex is delighted with this agreement which validates our past and present commitment to Acorn. Now we and our customers can look to the future with confidence. For Acorn users the agreement means that from now on they should refer all questions relating to the warranty, repair, service, maintenance and support of Acorn products direct to us at Reflex."

Based in Stevenage, Reflex Electronics have been fixing Acorn equipment for over four years and were contracted by Acorn to carry out warranty work before the company was broken up. David Lumley also stressed that his company are keen to carry out non-warranty work, act as a source of spares to anyone as well as provide technical support and even training. The company are also able to supply extended warranties both to individual customers and to resellers.

For further information, the Reflex Electronics enquiry number is: 01438 720 379.

Wakefield 2000 show revealed

The Wakefield Acorn Computer (User) Group has announced that the fifth Wakefield show has been booked for the weekend of the 20th and 21st May, 2000 at the now familiar venue of the Thorne's Park Athletics Stadium in Wakefield.

The previous four events have all been very successful, spurred on by the enthusiasm and professionalism of the Wakefield Acorn Computer User Group which belies their non-profit status.

For more information keep an eye on the Web site: http://www.cybervillage.co.uk/acorn/wakefield

Latest releases from Castle

CTL have a pair of new productions this month, including an A3 format SCSI scanner and a keyboard specifically aimed at youngsters. The new scanner is priced £199 plus VAT and is claimed by CTL to be the first of its type for Acorn users. Its full name is the ScanExpress A3 SP and it has 600 x 300 dpi optical resolution, 36-bit colour capability as well as monochrome grey scale modes. The scanner is bundled with David Pilling's popular *Image Master* software and the latest version of Castle's *Twain 2* driver which allows control of brightness, contrast and gamma settings.

Schools and parents with small children could be interested in Castle's *Kids Keyboard* which is suitable for Acorn Risc PC and A7000+ computers. This keyboard differs from others in that the key top legends are lower case characters instead of upper case – in Primary Schools children start by learning the alphabet in lower case – and the key action is also soft and tactile, better for small fingers.

Meanwhile, grown-ups haven't been left out – for example, the keyboard is equipped with the new Euro symbol. The *Kids Keyboard* is priced £39 plus VAT and is also available as an option on new computers purchased from Castle as a £20 upgrade. CTL, tel: 01728 723200, e-mail: acorn@castle.org.uk

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4.2 Gb	£129	£82
6.3 Gb	£134	£87
10 Gb	£155	£108
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18.8 Gb 5""	£196	£149

'+ i/face' price includes an APDL fast IDE interface.

Part-exchange available if you need a bigger drive. Please phone for prices.

2.5" IDE Hard Discs

	A3020	3010/3000
80 Mb	£49	£97
120 Mb	£53	£103
170 Mb	£60	£110
210 Mb	£66	£116
250 Mb	£72	£122
330 Mb	£79	£129
420 Mb	£86	£136
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1.8 Gb	-	£149

A3010/3000 includes APDL IDE interface, A3020 includes fitting kit Larger sizes and HD+CD available



Is here!

The ultimate super fast IDE interface for your Risc PC. Over 6 M/b per second! Only £119 or just £109 when purchased with a drive.

Blitz + RISC OS 4 + drive, just £222 + cost of hard drive

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420 Mb h/h	£49
4.2 Gb h/h	£131
4.2 Gb	£147

IDE CD ROM drives

Internal

Drive with all cables and drivers for RO 3.6+ where required

32x	£42
50x	£49

Drive including APDL IDE interface

32x	£89
50x	£96

External

Drive in case with power supply and including an APDL IDE interface. Probably the best way to fit a CD to a pre- RISC-PC machine.

32x	£149

CD ROM driver software

Works with most ATAPI CDs eg..Pioneer Goldstar, Panasonic, Lite-on, Mitsumi, Sony, Hitachi, NEC, Toshiba, Sanyo, etc. Includes CDFS for use with RO 3.5. Intended for RPC but can be used with an A5000. Only £8 or £7 with a drive

RiscPC and A7000 RAM

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16 Mb		£25
32 Mb		£47
32 Mb High Clearance		£52
64 Mb	from	£79
128 Mb	from	£139
2 Mb VRAM		£69
1 Mb to 2 Mb exchange		£47

Datafile PD CDs

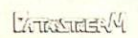
PD CD - 3	£6.50
PD CD - 4	£8.50
PD CD - 5	£6.50

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Prices include VAT and UK carriage except hard drives add £5 for internal drives, £8 external

This is only a fraction of what we have available. We also have thousands of discs PD and Shareware and around 500 discs of Acorn format clip art. For a full catalogue on 800K or 1.6Mb disc please send 50p or two 1st class stamps or see our web site.

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DTP-1 and DTP-2 £14.50 Each have over 500Mb of clip art files, all ready to use in Acorn Draw, Sprite or Artworks format. Ideal for use in education.

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- No complicated setting up. It's self-configuring so just plug it in!
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A version for the A3000, A4000, A3010 or A3020 is available with all the above features. Supports two internal and two external devices - £62

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The latest removable media hard drive. Fits in floppy drive bay on the Risc PC and works from either of our IDE cards. Bare drive with one disc - £209

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Ancestor +

Available at last! The long awaited successor to Graham Crow's highly popular genealogy program Ancestry, previously sold by Minerva. Upgrades from Ancestry 1 and Ancestry 2 available. Can import Ancestry 1 and II, !Family and GEDCOM files and export GEDCOM and HTML Only £59

General software

Faster PC - £20 The alternative XT PC emulator. Works on any model with 2Mb RAM from A3000 to Strong ARM RPC.

PowerBase - £15 Popular extremely powerful but very easy to use database. With examples, tutorials and printed manuals. Better than most products costing many times the price. Does everything that 99% of database users will ever need.

MenuBar - £15 The very best pull-down menu system. An absolute essential for any hard disc user. You can switch between up to 30 different menu bars. Incredibly easy to set up, add items to menus, move them, etc.

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Connect 32 fast SCSI

We have a limited number of these very fast interfaces (up to 7.5 Mb/sec) at only £89



Data Safe - A new concept in backup and data security

Data Safe consists of an external case to hold a 3.5" IDE hard drive, connected to your machine's printer port. This gives a large capacity portable drive, movable between machines and locations. Ideal for backup, secure data storage and transport. Software has all the features of our ideA card, partitioning, password protection,, etc. Great for schools. Supply your own drive or we'll fit one for you. Data Safe *Super* has the drive fitted in a removable drawer. You can fit a similar drawer to your Risc PC (best if you use our IDE card) and then just unplug the drive from the RPC and transfer data to another machine using the Data Safe.

Prices start at £99 or with 4.2Gb drive just £179 or with 10 Gb only £205

And now, the new DataSafe 'mini'

DataSafe has been highly praised by users, but they've made just one criticism - they would like it to be smaller and lighter to make carrying between home and office (or school) even easier. So we've introduced the DataSafe 'mini'. This has all the features of the standard version, but by using a 2.5" 'notebook' drive we've been able to make it very small, about 5" by 5" and less than 2" high, and by using a separate power supply it weighs around 14 ounces! So small and light you'll hardly notice it in your briefcase (or handbag). Prices start at £109 without a drive or with a 1.8 Gb drive just £199

ARM grows strong

Your reporter can remember once asking Jamie Urquhart, one of ARM Ltd's Senior Managers, why it was that in analyst reports addressing the RISC processor market ARM chip statistics were never featured. That wasn't very long ago – five years maybe? Today, such reports don't dare overlook ARM. In its latest quarterly statement, ARM reveals that it received licensing fees for 33.2 million ARM processors shipped in the second quarter of this year by its growing band of licensees. ARM's revenues in the quarter to the end of September rose by 40% to £15.7 million and profit before taxation was up 77% to £4.4 million.

Besides the news from Intel (see separate story), ARM has also been boosted by news of a deal with Texas Instruments (TI) and the news that Symbian, the Psion-based OS technology which runs on ARM chips, has been licensed by the worlds' largest pocket computer maker, 3Com, which produces the Palm family of devices.

The TI deal sees ARM join forces with one of the world's biggest players in DSP (digital signal processor) technology. The two companies will develop DSP chips controlled by ARM processors to supply lucrative markets, from networking hardware to mobile phones and computer and multimedia products.

Meanwhile, Symbian's deal with 3Com sees a technology licensing exchange between the two companies which should eventually see the Symbian Epoc32 operating system kernel running on future Palm products, though the Palm OS front-end will be retained.

Logically, this represents an opportunity for future Palm products to be ARM-based too. As the deal also aims to harmonise the source code compatibility of both Palm and other Symbian applications, Symbian's prospects are also strengthened. Symbian is already backed by the main mobile phone manufacturers, including Nokia, Ericsson and Motorola and most of their future products will be based around ARM chips and the Symbian operating system.

It's also bad news for Microsoft Windows CE which, incidentally, saw Philips abandon its loss-making CE pocket computer product line recently. Philips is likely to be a user of Symbian in its mobile phone range.

ARM's continuing success is rewarding to Acorn and RISC OS fans because, of course, we remember that ARM was born of Acorn and RISC OS depends on ARM-based hardware for its future. However, these positive sentiments are slightly tinged with the knowledge that had Acorn played its cards better, Symbian too might have been based on an Acorn OS.

Internet portal launched

It's about time there was a commercial Internet site dedicated to RISC OS in the form of a 'portal' and here it is, the Drobe Launch Pad at http://www.drobe.co.uk. The site offers links, news and information concerning RISC OS and other Acorn-related topics from one central home page. Peter Price, Drobe RISC Software's Web Development Manager explained that the site even has a news feed usually only found on larger, mainstream portals.

Other goodies include a POP e-mail checker without banner adverts, a search engine incorporating AcornSearch.com and over 20 other popular engines and links to the majority of the RISC OS industry's Web sites. Drobe is urging RISC OS Internet users to set http://www.drobe.co.uk as their browser's homepage.

In order to promote the start of this RISC OS portal on the Web and widen the visibility of RISC OS on the Internet, Drobe RISC Software is offering all RISC OS users a free banner advertisement which will run across the entire Fudgecake network for one month. In one sense the offer is practically unlimited in that even if your business is not RISC OS related you can use the offer to promote your personal Web site or somebody else's.

However, free banner adverts are restricted to one per Web site, the site being promoted must be broadly RISC OS related or at least display an icon advertising RISC OS and the banner must be 468 pixels long by 60 pixels high and no larger than 10K. You have until the end of November to take up the offer. To submit your site just go to http://www.drobe.co.uk/submit_ad.phtml. For more information, e-mail peter@everymans.com, tel/fax: 0870 740 2734



RISC OS '99 Show Awards

Best non-game, ever, for RISC OS

Apart from the wit who suggested the perhaps-never-to-be-released game *Karma* there were really only two products in the running, one old and one new and they scored the same, so it's a joint first place for:

Impression family
EasiWriter/TechWriter

Best game, ever, for RISC OS

While there were plenty of games to choose from in this category, it's probably not surprising that the winner is:

Elite

Best RISC OS Dealer 1999

Even more controversial and the first position was tied the final winners are:

CTA
CJE

Best non-game software

Although there have been plenty of new releases this year the ones that polled the highest were hardly unexpected. EasiWriter/TechWriter would have come out on top if it hadn't been for:

RISC OS 4

Best non-game hardware

There haven't been a huge number of hardware releases this year and there were quite a few people who decided that RISC OS 4 was a hardware product rather than software, however even they were unable to beat the votes for:

Riscstation R7500 Lite

Best game for RISC OS 99

With all the new games releases, mostly from R-Comp, there was at least a choice this year and the winner by a hair was:

Heroes of Might and Magic

RISC OS Personality for 1999

A controversial category, but by a long way the winner was:

Justin Fletcher

A real CD Burner

At the beginning of this year, a 4x CD Writer drive was pretty fast. Now Yamaha have introduced an 8x writer. Their new CRW-8424 also has a 24x read speed and maintains a 4x read/write speed. To put the writing performance into context it only takes 9 minutes to fill an entire 74 minute CD ROM compared with 18 minutes for a 4x writer. Apart from that, it's a conventional drive available in both IDE and SCSI versions. Pricing wasn't available at the time of writing.

Yamaha's Media Products Web site is at: http://www. yamaha.co.uk/ online/mediate

New version of Compo

Clares Micro Supplies have announced version 1.15 of their *Compo* image composition application. New features include additional PCA protocol plug-ins including drawing, painting, text input, stamping and cropping. These plug-in applets will work with any PCA2 application which works with sprites. *Compo* itself is now a PCA-compliant tool and can be used to in-place edit any 32K colour or 16 million colour sprite image within another PCA-compliant application.

Users will also find much-improved masking tools, including ant-aliased brushes and masked PNG file format generation. The improvements list is much longer than we have room for. For further information, check Clares' Web site at http://www.claresmicro.com

The upgrade price is £29.95 inc. VAT, plus £3 postage. Clares can be contacted at tel: 01606 833999, or via e-mail: sales@claresmicro.com

In brief

3-CD Quake Resurrection available

If you didn't visit the recent RISC OS '99 Show, you might not be aware that the official version of the classic *Quake 3D* shoot'em up game is now available for RISC OS users in the form of the *Resurrection Pack*, which includes 3 CDs containing the original version of *Quake*, *Malice* and *Q!Zone*.

All this, along with a disc containing the Acorn driver software produced by R-Comp, is priced £23 including VAT and postage. R-Comp sold out at the show but as we went to press, the back orders were just being cleared. For more information, contact R-Comp on tel: 01925 755 043, e-mail: rci@rcomp.co.uk, or browse http://www.rcomp.co.uk

RISC OS PDF development

Adobe's Acrobat portable document format (PDF) standard is in the process of being taken on board by RISCOS Ltd. The PDF standard is widely adopted and supported on other platforms. Based on the Adobe PostScript page description language, PDF documents retain a high degree of original layout design and formatting when displayed on-screen, and should match the output generated when the document is printed (in fact, *Acorn User* is sent to the printers as PDFs).

To start with RISCOS Ltd are making a restricted application called *Taborca* available for use with RISC OS 4. This version will only generate the first three pages of a document. In a few months' time a full commercial version is expected to be available. *Taborca* is available for download at: http://www.riscos.com

What? No cover disc?

Nowadays 800K discs are too small but many users still own older machines – but even they own CD-ROM drives – and most RISC OS people have Internet connections.

So for every issue, what would have been the cover disc will be on the *Acorn User* Web site for downloading and every third issue we will put a CD on the cover with the last three month's "cover discs" plus extra stuff.

Broadband future

Broadband is the new buzzword for data communications that transcend the speed capabilities of the now-humbled audio modem. The term is applied to optical fibre and co-axial cable-modem technology and to ADSL (Asymmetric Digital Subscriber Line – or Loop in the USA) which uses existing copper-wire installations.

Following BT's belated ADSL trial, other broadband ISPs and players are emerging. The Acorn users' friend -and-foe online organ *"The Register"* (http://www.theregister.co.uk/) reports that as the BT pre-launch ADSL trial charges are upped to £50 a month and the bandwidth chopped, Dixon's *Freeserve* is launching its ADSL broadband trial service in December for £59.99 per month, before BT's own spring 2000 roll-out.

Meanwhile Kingston Communications, supplying independent telecomms services in and around the city of Kingston upon Hull already operates its Interactive Television package. This includes video-on-demand, digital multi-channel TV, e-mail and fast 256kbps Internet access using ADSL over their existing network. Costing £14.99 per month inc. VAT the full package uses a set-top box to access the Internet with an infra-red keyboard available as an extra.

Compare these with what US subscribers can get. US West's latest RADSL service in Denver, Colorado offers 256kbps 'always-on' service simultaneously down the same pair of wires as the analogue phone, with a current offer of free ADSL modem and circuit activation for just $29.95 per month – about £19. Know any good immigration lawyers?



Remember Webite?

Webite has re-surfaced as a freeware development version of the HTML 3.2 Web browser that was part of DoggySoft's *Termite Internet* package. Now usable as a standalone browser, *Webite* uses Acorn's *Internet* module via a TermiteIP-wrapper, so the 1.48 version I downloaded can't actually be used yet with the original DoggySoft *Termite Suite*.

Richard Walker's Webite Central site has both compiled program and source code available for download, and Richard hopes that interested programmers will volunteer to assist with further development. The next release should allow multiple windows and other significant improvements. Will the old 'Acorn spirit' of friendly co-operation between dedicated programmers prevail? This 'stopgap' version isn't perfect by any means but it shows that there's life in the old DoggySoft yet!

Webite Central
http://www.nctv.freeserve.co.uk/index.html

The Old Dog renewed

In brief

Opening the Boot

Paul Vigay's Web site database of the RISC OS *!Boot* structure and contents of *!System* is a timely resource for users upgrading to RISC OS 4. Through the years of various releases and changes these directories can accumulate duplicate and extraneous files that may not now be required. To help you with the clear-out, Paul's page describes the files and directories that should be there and their functions.

Risc OS Support
http://www.vigay.com/riscos/mods.html

Word in your ear

Privacy.net is a consumer information organisation whose Web site demonstrates just what can be gleaned from visiting browsers. Your IP address, computer or proxy name, browser type, software serial number and even your name are all likely to be sent out to sites that you visit. The Anonymizer at http://www.privacy.net/anonymizer/ will give you a Privacy Analysis of what it knows about you, together with a Traceroute listing of all the machines you're going through, information about your domain name and the ownership of your network. Frightening stuff.

The Anonymizer
http://www.privacy.net/anonymizer/

Cache no cash

CacheFS is a freeware filing system written by David O'Shea that allows you to easily browse the *Browse WebServe* page cache offline. This is useful when a cached page has an off-site resource that *WebServe* would have tried to fetch when online. To set up the directory path for the cache, you drag the icon to the *CacheFS* config window, click OK and then select the 'Reread' option from the iconbar menu.

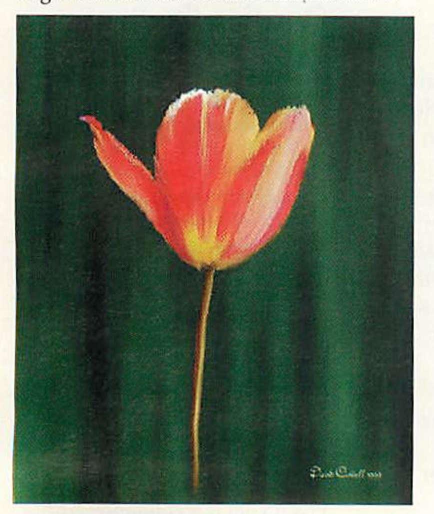
CacheFS
http://indigo.ie/~koshea/acorn/

Contacting AU

David Dade:
comms@acornuser.com

Tutorials from Spacetech

Spacetech has released a step-by-step tutorial for illustrating with *Photodesk*, entitled *Creative Digital Imaging: Making the Most of Your Digital Darkroom*. The tutorials have been created by Darlington artist and retired art teacher, David Cowell, and comprise a set of hyperlinked *Multimedia Textease* documents. The disc comes complete with a *Textease* viewer which may be run directly from the CD, meaning that the tutorials can be accessed easily.



Topics covered by the CD include: digital painting, photography, photo montages, manipulating photos for illustrations, portraits, and creative ideas for text – together with a Hints and Tips section that runs through some essential pieces of advice accumulated by David in 15 years of working with digital illustrations.

Much of the material on the CD covers general technique, and could be applied to painting packages other than *Photodesk*, although each stage in creating an illustration is explained carefully with reference to the *Photodesk* tools and effects that are used.

Such features as masking, textures, layers and smudging effects are given good and authoritative coverage, and the tutorials feature a strong focus on transforming photos into images that look as though they've been created with traditional art media, such a paint or charcoal.

David is a master of this, and the CD features a great many examples of his work, together with a number of additional image files that may be used as the basis for illustrations such as those featured in the tutorials.

The CD costs £24.95 and is available direct from Spacetech on 01305 822753 or visit http://www.spacetech.co.uk/ for details

Quilljar

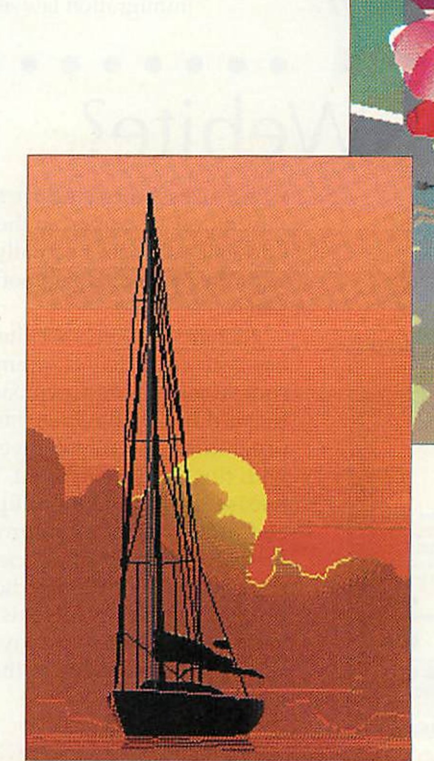
Well-known RISC OS-based artist and handwriting expert Christopher Jarman has contacted me following my request for URLs of your portfolios, and his distinctive site at *http://www.argonet.co.uk/users/ quilljar/* features not only examples of his graphical work, but a selection of typefaces in RISC OS format that he's designed, together with information on the man and his passions.

Christopher is the author of *Developing Handwriting Skills*, a comprehensive book used in UK schools since 1979, and has produced a CD for primary school children, called *ArtLesson*.

This CD aims to help children make use of paper-based art media, rather than digital art, and contains over 280 pages of ideas and activities for children. He's also a fine graphical artist, as his work highlighted here demonstrates.

If anyone else would like their work to appear in this column, or has any online portfolios of work available, please don't hesitate to drop me a line at *graphics@acornuser.com*. *Pic of the Month* returns next month – so get your entries rolling in for that also: printed entries receive a £10 cheque.





Contacting AU
Andrew Green:
graphics@acornuser.com



Astute Graphics

Over the next couple of months we'll be highlighting the work of some of the graphic design professionals working with RISC OS systems today – if nothing else, as proof that it can be done!

Nick van der Walle is well-known in the Acorn world as the marketing force behind Cerilica, makers of the forthcoming *Vantage* vector extravaganza. Astute Graphics, his graphic design agency, predates Cerilica by a good couple of years (and, indeed, was first highlighted along with my own agency by one of my predecessors in this very column).

Nick has used RISC OS machines since the end of the eighties, and already owned a Risc PC when he started out to become a freelance graphic designer. He says, "At the start I only really used *ArtWorks* (at a time when it could still compete with the Coral and Adobe equivalents on alternative platforms) and never forayed into serious bitmap image creation. I suppose I was quite blind as to the possible alternatives at the time, but it was also a matter of costs. Five years ago, crossing over to a Mac or PC would have equated to a vast outlay if the professional packages were to be included."

©Astute Graphics

Although his awareness of the world beyond RISC OS is now much greater, Nick still considers RISC OS his home platform as it allows him to be more productive "which equates to quicker turn-around times for contracts and therefore more profit" (ultimately the bottom line for anyone trying to run a graphic design business as their livelihood).

However, he feels that RISC OS itself needs major advances over the coming years, to avoid any advantages it has over other operating systems vanishing, and leaving comparisons to be made only on the strength of individual packages – "a war in which the current aging programs on RISC OS would lose in seconds, with very few exceptions."

Nick progressed on from just *ArtWorks* to using *Photodesk* more extensively. "However, as I will always be closer to engineering than art, vector graphics is what I feel at home with. The first package I ever had was *Euclid* (essentially a 3D version of *Draw*) and could operate it to levels beyond the author's expectations. This skill really helped when I set up Astute Graphics and had to complete a number of technical illustrations.

By creating 3D bezier curves, I was able to visualise complex 3D surfaces and trace these in 2D using *ArtWorks*, later filling the profiles with appropriate shading." Of course, more recently, Nick has been using the latest pre-release versions of *Vantage*, testing its improved line tool and transparency effects in real-world situations. He has "also found *Vantage* to be very good for Web graphics with better anti-aliasing and real-time on-screen dithering of colours." His everyday work also brings him in close contact with *Impression* ("one day I shall migrate to *Ovation*"), *ChangeFSI*, *InterGIF*, *HTML Edit*, and *Fresco* to check his Web work.

The ease of use and efficiency of RISC OS has been a great help to him in his work – as has the closely-knit development community. "You can talk to the person who created the program and get the best advice possible. And then there are the customers who are very tolerant. Ideal." But the familiar question of print bureaux asking whether the Acorn was "a Mac or a PC" is a continuing problem for any graphics professional working under RISC OS. "They never cared when the EPS or TIFF file landed on their desk, but their scepticism was enduring!"

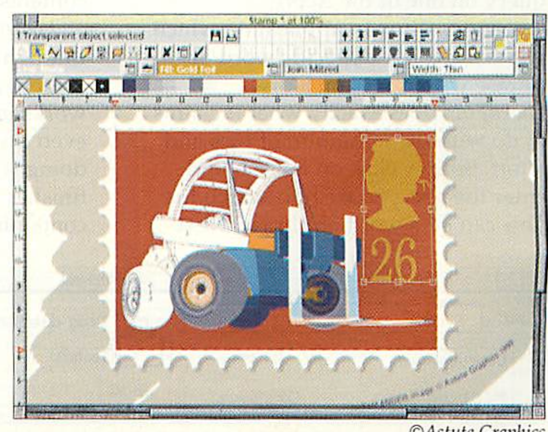
Although the main problem of RISC OS now is the lack of up-to-date Internet technology, he believes the platform can hold its own in the graphic design world. And, he observes, "there are equal perils to be encountered on other platforms, even passing files between machines due to a lack of 100% adopted file format such as the sprite or drawfile."

The three examples of his work on this page each had a different start to life. *Convergence* was created as a result of his proposal for a new image for Spacetech's *Photodesk*, the highLANDER technical illustration was commissioned along with an article for an engineering publication (the whole article and graphics having been created on his Risc PC) and the proposed AAUG logo was an entry to a competition. Typically all of Nick's work is commissioned, especially his technical illustrations, which can only be for one purpose.

Becoming involved in professional graphic design was a natural progression from engineering design, which Nick studied at university and in which he later had a career. "I still enjoy engineering and I strive to be equally creative in the technical illustrations I produce. I also find it a major advantage to know what the people showing you the engineering drawings on which to base the illustration are talking about."

His wish-list for the future? "I set out with Simon Birtwistle to create *Vantage* (although truth be told, he creates and I shout about it) because *ArtWorks* was well past its sell-by date. *Photodesk* now has layers and I can't think of anything that is really needed from it. This combination of packages coupled with some new hardware from Millipede will once more gain my unconditional faith in the platform.

"'The future's so bright, I gotta wear shades'. As somebody once sang."



©Astute Graphics

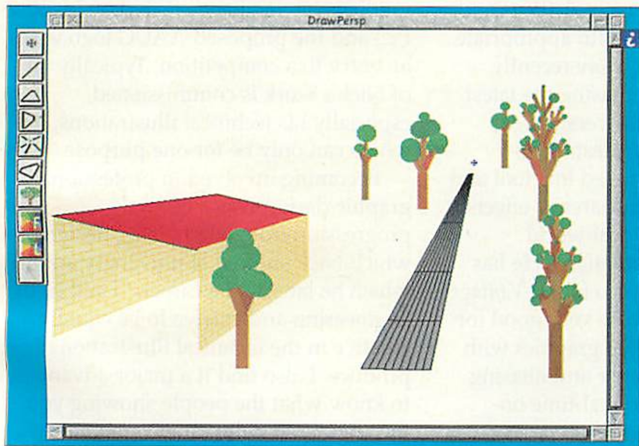
DrawPersp

I discovered the following application on one of my random jaunts around the Internet one evening and decided that it warranted a second look. Written by Robert Seago, *DrawPersp* is a complement to *Draw* which allows you to create simple vector diagrams representing the perspective of a scene.

By defining a vanishing point, you can then create walls, lines and roofs which conform to the correct perspective. I was surprised to find that *DrawPersp* even comes with a complete fractal tree generator. This facility is in fact based upon an idea published in *Risc User* and is used with their permission.

By experimenting with different parameters a multitude of trees can be plotted, again all positioned according to the correct perspective.

Initially using *DrawPersp* can be quite tricky to get the hang of but you can get some impressive results with a little bit of perseverance. Although limited facilities exist within *DrawPersp* itself, it will OLE with *Draw* proper, so you can easily delete mistakes or move objects around using that application. Saving the drawfile will transfer the modified image back into *DrawPersp* for further manipulation.



My first attempt at a scene using DrawPersp. I like the fractal tree facility, but I think my trees look a bit poorly!

There are four main ways of entering shapes into *DrawPersp*: by creating a) horizontal surfaces, b) vertical surfaces, c) lines pointing to or from vanishing points, and d) roofs. The last of these seems to combine the horizontal and vertical tool to create a surface area – such as the red roof on my lean-to.

Either line or fill colours can be chosen using standard RISC OS-style colour pickers. However, the 'surface' icons allow you to choose a texture style if you like, such as bricks, outline or plain filled surfaces. I especially like the brick one – as you can tell from my doodle.

At any time the vanishing point can be moved around, so you can get some interesting effects. Although some of the effects don't work quite as expected, *DrawPersp* is still under development so hopefully we'll see future upgrades to this worthwhile educational or artistic complement to *Draw*.

It's available to download free of charge from http://www.users.netnet.co.uk/rjseago/pdsoft.htm

Look 'n' find

Again, this application was discovered after I searched on the Internet, this time in response to a query on one of the Acorn newsgroups for an application which would seek out a specific word or phrase within files on a disc. *LooknFind* does exactly what it claims to do with the minimum of fuss and effort. Simply click on its icon and enter the text you wish to search for. This can be a word or phrase. Next drag a selection of files into its control window and click the relevant icon to either scan filenames or to scan the contents of the files themselves.

LooknFind will then go off and scan through all the selected files for content matching your query. It works in the background so you can even carry on with what you were doing while it does its stuff. When it finishes it will open a window containing the results of its search.

LooknFind is careware, which means that if you find it useful you should register it by donating a fiver to charity. If you are one of those people who have hundreds of text files and want to locate that elusive bit of text – which you know is in one of them – *LooknFind* should be the ideal solution for you. It was written by Robert Lytton and can be found at http://www.acornusers.org/rl/LnF.html



RISC OS 4

All of the applications looked at this month are RISC OS 4 compatible.

Megumi

Described as a "fast and cute image viewer", *Megumi* is one of those useful applications that seem to get overlooked because of more familiar equivalents. In the case of image converters, most people, when they need one, immediately think of *ChangeFSI*, *Translatr* or *FYEO2* before *Megumi*.

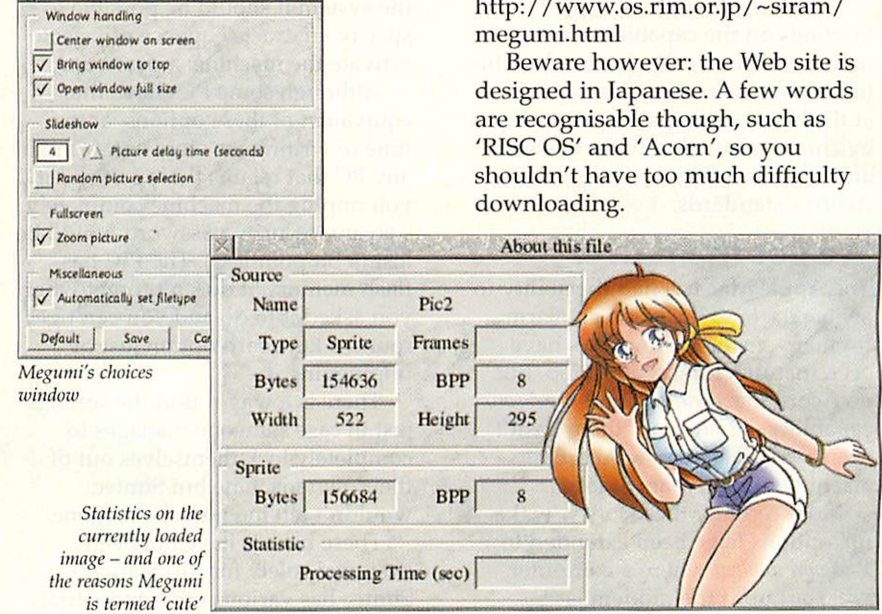
Although like a number of alternatives, *Megumi* will read and convert JPEG and GIF images to RISC OS sprite format, it will also convert quite a few rarer image formats, such as PNG, ECC, MAG, PI, PIC. The last two appear to have been developed in Japan and used for a range of Anime cartoon style images whose popularity has spread from that country, hence the name.

In fact, *Megumi* is one of the few, if not the only, RISC OS application which will load and convert KISS images. These are popular in France and Japan for displaying the multitude of KISS dolls you can download from the Net if you are an Anime fan.

Megumi's skills don't, however, stop at displaying static images. It can also display animated images and both decodes and displays files very rapidly – being written in ARM code – so you can use it for displaying animated GIFs in addition to the range of specific formats supported. Another nice feature of *Megumi* is the ability to run a complete selection of images as a slideshow. Just drag a selection of images onto *Megumi*'s icon and sit back while it displays the sequence. You can set it to show them in random order or not, and configure the length of delay between each one, so it should be suitable for anyone who needs to quickly run a sequence of selected images.

Megumi is developed by Dirk Krumbholz and is freeware, so you can download a copy from http://www.os.rim.or.jp/~siram/megumi.html

Beware however: the Web site is designed in Japanese. A few words are recognisable though, such as 'RISC OS' and 'Acorn', so you shouldn't have too much difficulty downloading.



Megumi's choices window

Statistics on the currently loaded image – and one of the reasons Megumi is termed 'cute'

DunSnappr

This small utility is written by Simon Anthony, who brought us *ECSUtils* (mentioned last month). Indeed, *DunSnappr* is a part of *ECSUtils*, but which has now been made into a stand-alone application and improved in the process.

This was done by Simon in reponse to a request from Dunstan Orchard (who he?). I wonder if that's where it gets its name from?

The aim of the utility is to make sprite files of any open window underneath the mouse pointer. Where the application has been improved and made more flexible is in the control and choice of what to actually grab from under the pointer. You can now choose whether to grab the various bits of 'window furniture' also – that's scroll bars and icons around the edge, to you and me. This is because RISC OS windows are so flexible, allowing software authors to control exactly which icons are present in each window.

DunSnappr has a distinct keypress for every eventuality. The actual window snapshot is executed by moving the mouse pointer over the window you want to grab, and pressing the two Shift keys simultaneously.

If you wish to remove the vertical scroll bar, horizontal scrollbar or title bar, just tap the Left Control, Left Alt or Right Control respectively. The application runs in the background so doesn't have any icon or menu, thus you can only quit it from the task window. However, it's an excellent, compact utility for quickly and easily grabbing open windows from the screen. If you want complete customisation then you can always run the full *ECSUtils*. It's available to download now from http://www.innotts.co.uk/~ecsltd/

Contacting AU

Paul Vigay:
pdpage@acornuser.com

Times are chan

On the Monday morning before the RISC OS '99 show I went on a little jaunt north of Manchester to the birthplace of the first commercially available RISC OS computers to appear 13 months after Acorn pulled the plug on the market.

Simtec have been in the RISC OS market for a long time, best known for their memory upgrades and the multi-processor expansion card for the Risc PC known as the Hydra – but the Simpson family (the business and circuit board manufacture is carried out at the family home) has a reach beyond our small world, designing and building boards for dozens of clients.

I had already had a couple of briefings on the capabilities of the new machines by RiscStation but this time it was to be a concentrated look at the hardware capabilities. A chip by chip examination of the system and why its quality exceeds even Acorn's standards.

We got the power

The Apple Mac has had the ability to switch itself on based on an alarm for many years, various PCs have been manufactured with it too. But no Acorn machine has had the capability – then again there hasn't been a completely new Acorn machine in four years at least.

More recently these fancy 'wake-up' options have been extended to: *Wake on modem* where a computer will start up if the modem is accessed from an outside telephone line; *Wake on LAN* makes it possible to arrange things so that if the computer receives certain network packets it wakes up; *Wake on keyboard* so that just pressing a key on the keyboard starts the machine; you might have some other specialised way of switching the machine on, in which case you can have *Wake on something else*; and finally there's *Wake on power switch*.

Did that last one seem a bit odd? It isn't. On these boards the power switch is 'soft', it's just a signal to the part of the machine that never sleeps to say it's time to wake up now.

The board has a built-in PIC processor that is kept powered even when the main processor is switched off, as are certain other key areas of the machine such as the network area, both of the two serial interfaces, parts of the keyboard and so on.

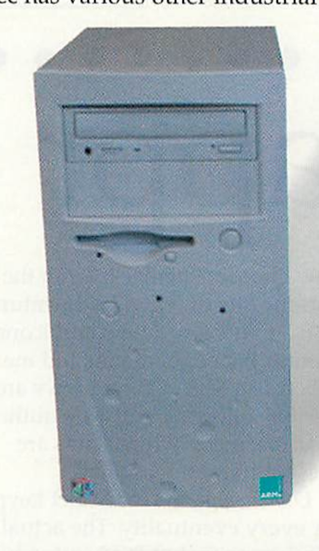
The PIC is programmed to watch for events happening in the live areas and controls the system's power depending on what it's been told to do. Each of the events is individually switchable so you can have all or none – the keyboard option can be limited to only working with certain keys and although it hadn't been put into the PIC's software at the time I viewed the system it should be possible to specify an exact sequence of keys to activate the machine: a password.

Although some PCs have the equivalent of these options, at the time of writing we were not aware of any PC that retains these settings if you unplug the machine completely – so any security password would be lost (a bit pointless). The PIC has flash memory, it doesn't forget what you asked it to do and you can't get round a keyboard option just by unplugging it.

There is a way round the settings just in case someone manages to completely lock themselves out of their own machine but Simtec wouldn't tell me how it was done.

These boards have not been designed solely for RiscStation – Simtec has various other industrial customers who want this kind of machine, and to that end the PIC also contains a watchdog program that notices if the machine has crashed completely and will restart it without any intervention, essential when used in a stand-alone situation and quite useful to those who leave their machines switched on all the time.

The power supply is a standard ATX with a 5V standby voltage that keeps the always-awake sections

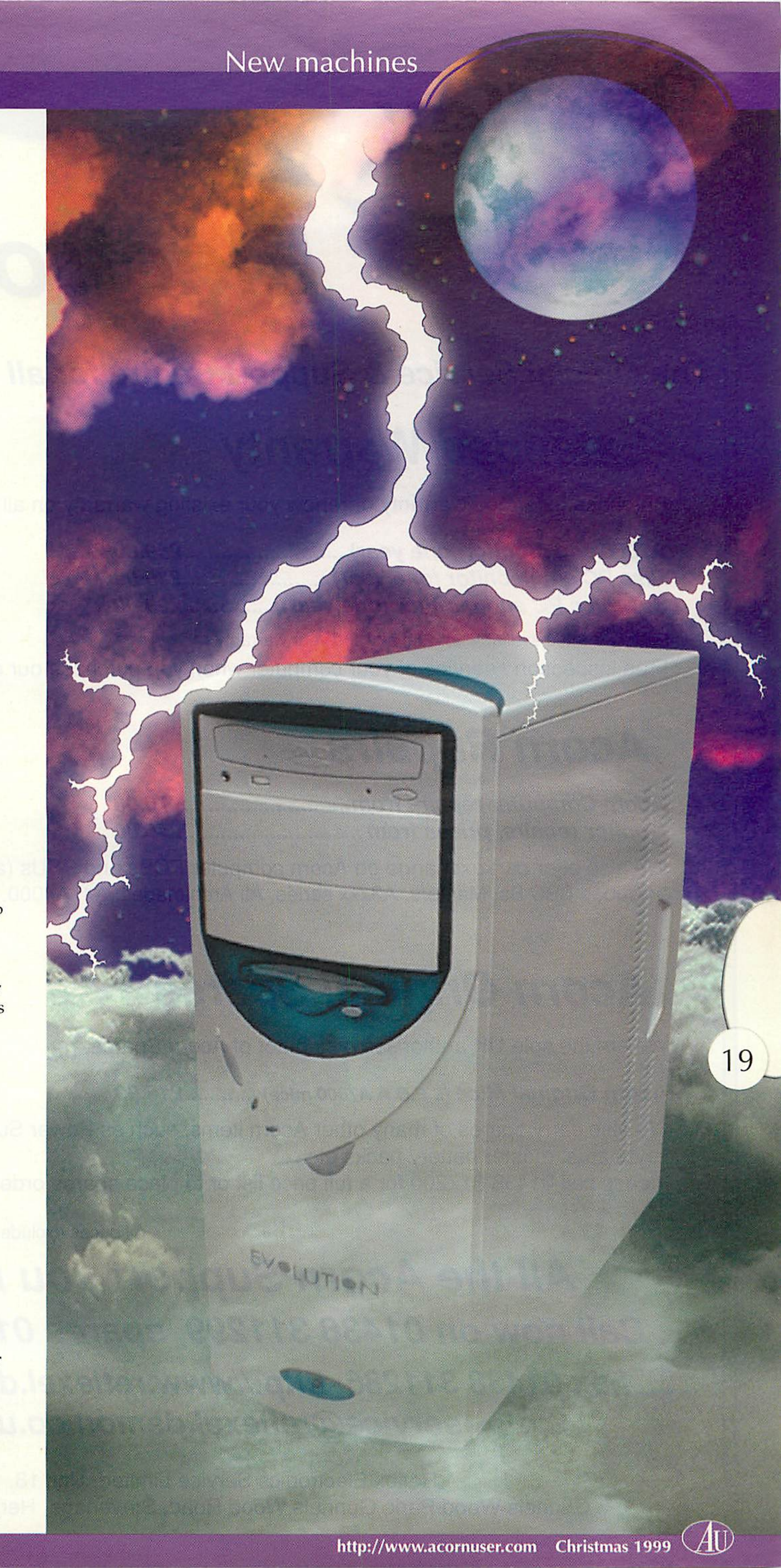






Steve Turnbull takes a detailed look at the first of the new machines

ging



running all the time. The problem with PC power supplies is that they expect a big loading in order to kick into life, these new boards draw so little that there's almost a risk that the supplies won't start up – with tongue firmly in cheek: Simtec recommend you buy lots of hard drives to ensure there are no start-up problems.

Finally, on the subject of power, there are the fuses. Personally I've never had a fuse blow in a computer but it does happen, and when it does it's a real pain: Where is the fuse? Which one has gone? And how do I get a replacement? With these new boards those problems no longer exist, they use thermally resetting fuses. If one blows you just wait until it cools down and off you go again.

Against the clock

Simtec talked to me about the slow shift towards PC-style architecture, the fact that we can migrate slowly, getting cheaper and cheaper machines as we go. One step in that direction is the real-time clock (RTC).

For these boards Simtec no longer use the I2C method – I2C is a method of communicating with various peripheral devices but it is slow and wastes many processor clock cycles. Instead they have standard PC RTCs which also contain a unique serial number.

These sealed units have a built-in

battery which will last ten years after which you can just replace them – if it's important to keep the same machine ID you can, alternatively, attach an external battery after the ten years is up – considering how long the old Acorn machines last, and how much better these machines are it wouldn't surprise me at all if they are still going strong in ten years.

Oh yes, and these RTCs *are* millennium-compliant.

Something I was not aware of until my trip to Simtec was how PC chips are different, even these have acquired the dreaded 'plug and play' label. What it means is that they won't just switch on and work, but they have to be initialised and assigned to an area of memory before they begin to function.

One particularly nasty type of PC virus messes up the initialisation of these chips and, for example, assigns them all to the same area of memory so any attempt to read or write to them wreaks havoc and prevents anything from functioning – a wonderful innovation.

Simtec have some clever hardware protection that prevents this happening so you won't get a RISC OS virus doing the same thing. Once again they wouldn't tell me anything further about that, I didn't mind.

Memories for you

As these machines have extensive differences in hardware to the typical RISC OS machine Simtec have been in discussion with RISCOS Ltd (ROSL) about what to do. Taking the clock as an example, for a program to find out the time and date it calls a particular routine in RISC OS that then goes through the necessary operations to read the information – but this is a copy (in RAM) of what the hardware clock says.

Old RISC OS assumes there's a I2C clock located in a certain place and looks for it. This assumption has to be changed so Simtec have been working hard with the ROSL programmers on a standardised way of bringing about the hardware independence so that every new manufacturer doesn't have to have a customised version of RISC OS – a nightmare.

Part of the solution is that there are three ROM sockets in the machine, one pair take an (almost) uncustomised operating system, and the third to contain the necessary routines to access the actual hardware in the machine – whatever it happens to be.

Simtec, naturally, didn't stop there, these boards have ability to take a flash ROM of up to 32Mb capacity – although once again this is primarily for their non-RISC OS clients who don't want delicate harddiscs in their robust hardware.

For RAM there are the standard two SIMM sockets taking up to 128Mb, the standard machine will get 60ns memory and the memory modules don't have to be matched at that speed. The machine will run with slower 70ns memory and will run faster if given 50ns modules.

With typical Simtec thoroughness the machine starts up normally and then queries the modules to see what's available – if faster memory is plugged in the hardware and software is re-configured so the machine runs quicker, it makes the best use of whatever is fitted.

Like the A7000 range these new boards don't have any VRAM which means that with bigger/higher resolution screens they do slow down. In a screen mode of 1600 x 1200 x 256 colours the download speed from harddisc is about 2Mb/sec – which is the same as a Risc PC *with* VRAM. In screen mode of 800 x 600 x 256 colours you get 4.5 to 5Mb/sec, these figures were provided using David Holden's disc speed utility, rather than being idealised guesswork.

An independent test using the Replay *Tumble* demo (timing how long it takes to run through the whole sequence) gives a figure of 610 seconds for these new boards, a Risc PC 700 with VRAM does it in 700 seconds.

Socket to me

The back of the board has a standard set of ATX connectors which, reading from left to right, are: mouse; keyboard; network; parallel; serial; video; and audio group.

The mouse and keyboard sockets are interchangeable so it doesn't matter if you plug them in wrong – the software sorts it out, in fact this isn't a new feature, RISC OS has always been able to do that.

The network card is a standard 10baseT which somehow manages to give more than 450Mb/sec using Acorn *Access* which is not the most efficient protocol in the world. With all networking software and hardware built-in this is the first RISC OS machine that can match the iMac for connectivity, just plug it into your LAN and go – well, maybe.

The parallel port is, of course, bi-directional but conforms to the two major standards ECP and EPP which are used for scanners as well as

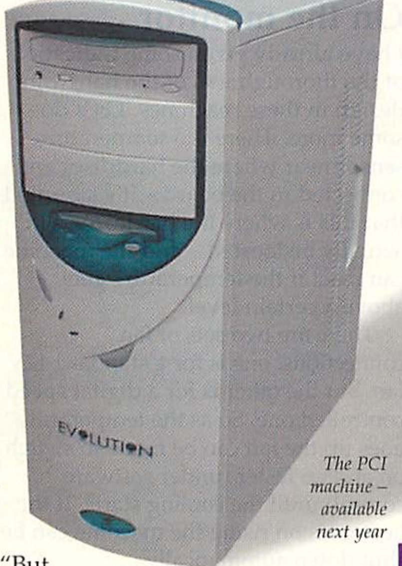
PCI machines

RiscStation Ltd has been pushing their PCI-capable machine quite heavily in recent months, lots of hype but with some genuine potential. Then suddenly it all went quiet and there were mutterings that Simtec had got it wrong, that it couldn't be done. So I asked them specifically about it:

"It isn't cheap," said Gareth Simpson "But of course it's possible – and practical. What happened was that we had found a relatively low-cost PCI chip-set that appeared, on paper, to do the job. So we got hold of a set and began testing it.

"Unfortunately it wasn't good enough, it couldn't do everything that was claimed but it took us a while to discover the problem so we were forced to reject it. We have switched to a more expensive chip-set that will definitely do what's needed.

"You can't do PCI in a cheap machine so the PCI machine has been delayed until early next year but it's given us the opportunity to finish the board for the R7500 Lite and the NetWORX."



The PCI machine – available next year

Board layout of Simtec's radical design

printers. There's a pseudo DMA (direct memory access) channel that is used with the parallel port which means data can be read in even faster. The primary serial port (there is another) will run at 460Kbit/sec which is somewhat faster than the Risc PC's 115Kbit/sec.

The video port has hardware support of DDC – okay, I forget what it stands for but it's a way for the monitor to tell the computer what the monitor is capable of displaying. Once the software support is supplied (and should be made a part of RISC OS) it will mean you won't have to worry whether you have the right Monitor Definition Files any more.

Once the information has been downloaded from the monitor the display software will just list the modes you can have, there'll be no chance of damaging your monitor by driving it to hard plus you'll just be able to plug-in any monitor and just start. However the software support is not yet there.

I heard that

The audio capabilities of this machine now match a decent PC, you get MIDI in/out; there's standard line in, line out (headphones) and microphone; a 50KHz audio sampler; 20 voice FM synthesiser as standard plus there's wavetable expansion on the board itself (of which more later).

Typically Simtec have allowed all the audio sources from the board (including two CD audio inputs) to be mixed on board plus there's the capability to do filtering of the sound – all controlled from software. I was treated to a number of demonstrations based from simple BASIC programs.

There's a 1.1W audio amplifier for a slightly chunkier output if you want it plus you could slot this board into a multimedia PC case which has external physical volume header and it does work I also have to include the analogue joysticks under the sound section because they are part of the audio package and there's something interesting: On most PCs the joysticks are read by the processor in a way that wastes processor cycles. When the Simtec boys were examining the chip specs they found there was a setting where reading the joystick ports could be put on automatic and the result just read by the processor in one go when needed. Guess which option they chose.

This is the most comprehensive RISC OS music machine so far created – take this machine, combined with R-Comp's *Anthem* software and you have a very potent combination indeed.

On the monitor

I have already given some indication of the thoroughness of the hardware design in these machines. Let's do some more. There is a temperature sensor near where the harddiscs are connected to the board – it's assumed that this is where the harddiscs will actually be located – and the machine can react if the temperature gets above a certain level.

There are two sets of fan connections, one is for a standard 12V fan, but the other is for a digital speed controlled one. So as the temperature goes up the fan can be made to switch on and go faster (under software control) until the cooling starts. If the heat goes on rising the machine can be shut down automatically.

There's also feedback from the fan so the machine can tell if it's actually going round – this system is not absolutely essential for machines that don't have Pentiums inside but, once again, it's one of those handy features for those third parties Simtec supply. And you never know, you might be stuck in a desert one day...

The system monitoring doesn't stop there: There is monitoring of the voltages around the board (which can detect overvoltages as well as undervoltage) plus if one of those thermally resetting fuses does blow – it can tell you which one it was (not that you need to replace it).

More connections

As I begin to run out of space I shall type faster to get it all in. Apart from the connections off the back the main board is bristling with headers to connect even more stuff:

- Second serial port which can be configured as a serial port, another MIDI port or a 115Kbit/sec IrDA (infra-red) port;
- Wavetable connector for added sound – slightly skewed in favour of a particular unit which has 256 byte FIFO (first-in first-out) queues, most only have 16 byte queues. This means it won't trip up if the processor is busy for a while;
- Four IDE devices, thoroughly buffered and can detect cables in the wrong way round. Can reset IDE from software;
- More joysticks;
- Second audio CD mixer connection;
- Can support two floppy drives;
- Acorn genlock (as Risc PC);
- I2C header;

And the ISA socket, for a few pennies why not? Interestingly the ISA connections are just about the same as a standard Acorn 'podule' connector apart from the I2C signals. Simtec have had an ISA modem working – though not thoroughly tested. Once again it was a feature of more use to their 'other' customers.

Conclusion

So there you have it. The new RISC OS machines, as made by Simtec. In their RiscStation incarnations they are the R7500 Lite, with 4Gb harddisc and tons of software supplied; or the NetWORX which is the same machine but with no harddisc supplied, designed purely for local network usage. I cannot deny being very impressed. END

Product details

Product:	New machines from RiscStation
Price:	From £399 + VAT
Supplier:	RiscStation Ltd or your local RISC OS dealer
Tel:	01942 79 77 77
E-mail:	info@riscstation.co.uk
Web site:	www.riscstation.co.uk

Plugged-in

Colin Sutton finds a new interest in plug-ins for Artworks

Early in 1992 a great stir was created among Archimedes owners with the arrival of *ArtWorks* from Computer Concepts – a modular object-orientated illustration program, in other words a vector art drawing package far beyond anything previously available.

Eight years on *ArtWorks* is still very popular having a large and well established user base plus a new generation of 'second users' as equipment and software change hands. Remember I used the word 'modular' in the opening paragraph and this is the secret to its expansion and continuation for sometime to come.

A close look inside *ArtWorks* will reveal it's made up of many smaller modules (or tools) which form the complete package and allow for easy addition of extra modular tools, known as 'plug-ins', from CC and other third party developers.

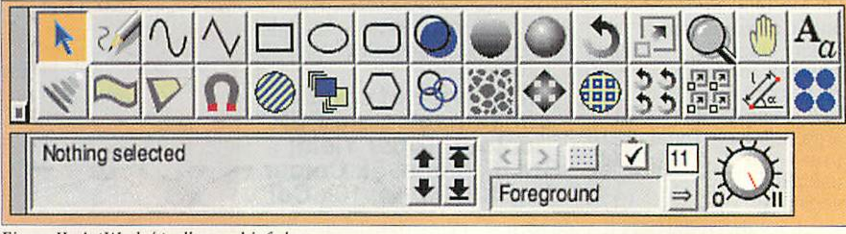


Figure II: ArtWorks' toolbar and info bar

How do they work?

The plug-ins are in the form of mini applications, each containing the appropriate module. These mini-apps are simply dragged to the 'Auto' directory inside *ArtWorks* and next time the program is run it will automatically load the new modules from within the plug-ins.

If you are using the 'Quick Start' option in *ArtWorks* you will need to switch it off, re-save the Choices and quit *ArtWorks*. Re-running *ArtWorks* shows every module it loads including any new plug-ins added to the 'Auto' directory. Re-selecting 'Quick Start' and 'Save Choices' will now restore the status quo. Step-by-step instructions for both installation and de-installation are included with most plug-ins.

Some plug-ins will now appear in the *ArtWorks* toolbox window (the order of these tools can be changed). The info bar at the bottom of the *ArtWorks* window will vary its contents depending on the tool currently in use. Other plug-ins will add extra options and functionality to the *ArtWorks* sub-menus.

The plug-ins

CC's foray into providing additional modules was rather shortlived. One of the first to appear in 1994 was the *Arranger* 'magnetic tool' actually developed by Open Sky Projects. Its purpose was to make objects snap to one another in a similar way to snapping to guide frames in *Impression*. Although a very useful tool it was criticised for its poor presentation and minimal instructions. *Arranger* was not StrongARM compatible but one Martin Würthner (more of whom later) came to the rescue with a StrongARM patch.

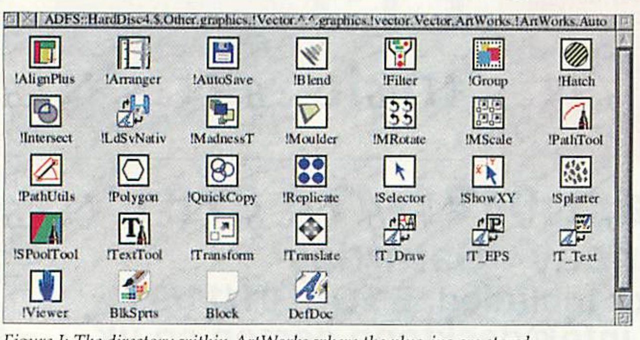


Figure I: The directory within ArtWorks where the plug-ins are stored

About the same time, *Pressure*, the Eesox pressure tool appeared and was to be used in conjunction with a pressure sensitive graphics tablet. *Precision* from CC is really a pair of tools, *Mover* and *ReSizer*, added to the toolbox. *Mover* allows movement of objects or groups of objects with a single click.

ReSizer, unlike the *ArtWorks* scaling tool, is concerned with absolute height and width of an object or group rather than just a multiplier. Instructions were minimalist to say the least.

A freeware plug-in *Splatter* by Richard Millican (a CC employee at the time) appeared in 1996 though it appears to have been started some two years earlier. Operation is simplicity itself, click on the *Splatter* tool and splatter away – with a name like that do you really want more instructions?

As with all the *ArtWorks* tools it is up to the user's imagination to decide what is appropriate in the artwork being conceived. Even the most bizarre of special effects can be 'just right' if used in the right amount and in the right context.

Vilkommen Martin Würthner

The idea of plug-in tools really took off with the involvement of Martin Würthner, famed for his innovative, quality software. Multilingual Martin (he is actually German) is regularly seen at shows, resplendent in dapper jacket and bow tie displaying typical Teutonic efficiency. This same attention to fine detail is reflected in his wide range of plug-in tools for *ArtWorks* where each is supplied with detailed and helpful instructions coupled with the

availability of upgrades, Web site information and support pages. Martin's approach is to combine some of his plug-ins into small groups containing related modules. They are a mixture of commercial, shareware and freeware.

AlignPlus group

A shareware trio of plug-in modules comprising:

AlignPlus – Does not add a tool to *ArtWorks* toolbox but rather it adds three menu entries to the *ArtWorks* Objects sub-menu allowing you to perform various enhanced alignment operations with respect to the baselines of text objects as opposed to the bounding boxes.

MRotate – Provides a tool allowing rotation of several objects simultaneously but about their own centres, working in the same manner as the standard and less versatile *ArtWorks* rotation tool.

MScale – The same concept as *MRotate*, but scales each object individually from its centre rather than rotating.

Polygon group

The shareware registration for *Polygon* also includes a licence for *Intersect* and *PathUtils* – two tools reserved for the exclusive use of *Polygon* users and not available separately.

Polygon was actually the first non-commercial *ArtWorks* plug-in module, providing users with a tool to create *n*-sided polygons and stars and with a single mouse click to convert one to the other. The tool was inspired by CorelXara's *QuickShape* tool. A very detailed help file covers its many features.

Intersect – As its name implies, it allows you to intersect shapes or objects with each other. It does not add a tool but adds two menu entries to the Lines/Shapes sub-menu.

PathUtils – Allows you to control line lengths and angles of the selected path object. Like other tools

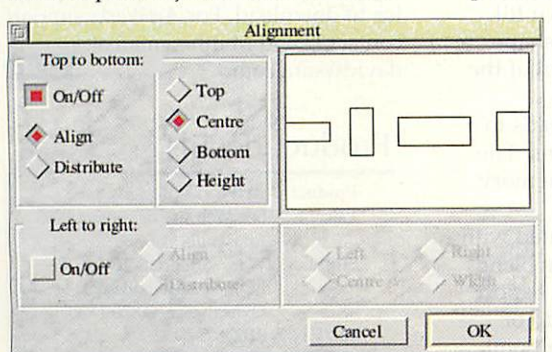


Figure III: The AlignPlus menu

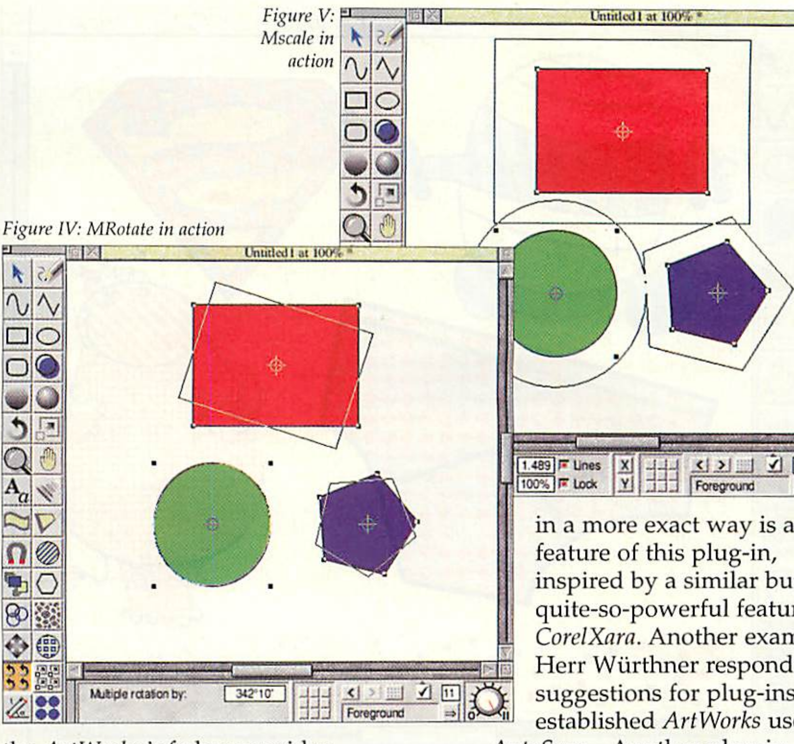


Figure V: Mscale in action

Figure IV: MRotate in action

the *ArtWorks* info bar provides editable boxes for co-ordinates, angle and line length.

Freeware group

The freeware plug-ins are available for individual download from Martin's Web site.

MadnessT – Martin has offered this as a freebie as he says "no-one would pay anything anyway!". It is a tongue-in-cheek fun module. If you have tried Acorn's *Madness* application from the old RISC OS 2 days and seen its bizarre effects you have some idea what this module does.

ShowXY – A neat little idea inspired by a small feature in Jonathan Martin's *DrawPlus*. *ShowXY* adds a 'Show Co-ordinates' item to the View sub-menu. A small window continually displays the pointer position in the window under the pointer. The option can be switched on or off.

Translate – Provides an additional tool in the *ArtWorks* toolbox whose four arrows (up, down, left and right) allow you to translate objects by specific amounts (for example 0.5cm to the left), a simple but most useful feature missing from the original program.

ZoomPlus group

The shareware registration of *ZoomPlus* also includes *AutoSave* and *QuickCopy*.

QuickCopy – Adds an extra tool to the toolbox to allow the creation of multiple copies of an object in a very quick and easy way. Positioning the copies in a more exact way is a feature of this plug-in, inspired by a similar but not quite-so-powerful feature in *CorelXara*. Another example of Herr Würthner responding to suggestions for plug-ins from established *ArtWorks* users.

AutoSave – Another plug-in providing an extension to the File>Choices... sub-menu. A new icon in the document Choices window allows auto saving with or without a prompt at arbitrary intervals. The auto-save status can be saved within the document with the added benefit that you can specify the auto-save behaviour for each document individually.

ZoomPlus – Best described as an enhanced replacement for the original *Viewer* module and although the tool is called *ZoomPlus*, it actually comes as a directory called *!Viewer* – not as confusing as it sounds. As with all plug-ins which replace existing *ArtWorks* modules, it is recommended that you make a backup of the original in case you ever feel the need to revert back to it.

Again the extensive help file guides you through the many new features, most notable of which is that the Zoom tool info bar now shows Undo and Redo buttons (with keyboard shortcuts) allowing movement through the last 32 zoom settings for a particular window.

Single plug-ins

Filter – This is a single shareware module of quite some complexity and it is essential to study the extensive help file. This quite powerful plug-in adds a 'Filter' option to the Objects sub-menu. Its purpose is to filter the current selection depending on filter conditions, for example object type, fill type, line colour, font size and so on. – rather similar to *DrawChanger* or *DrawWorks*. Like all the plug-ins, it is

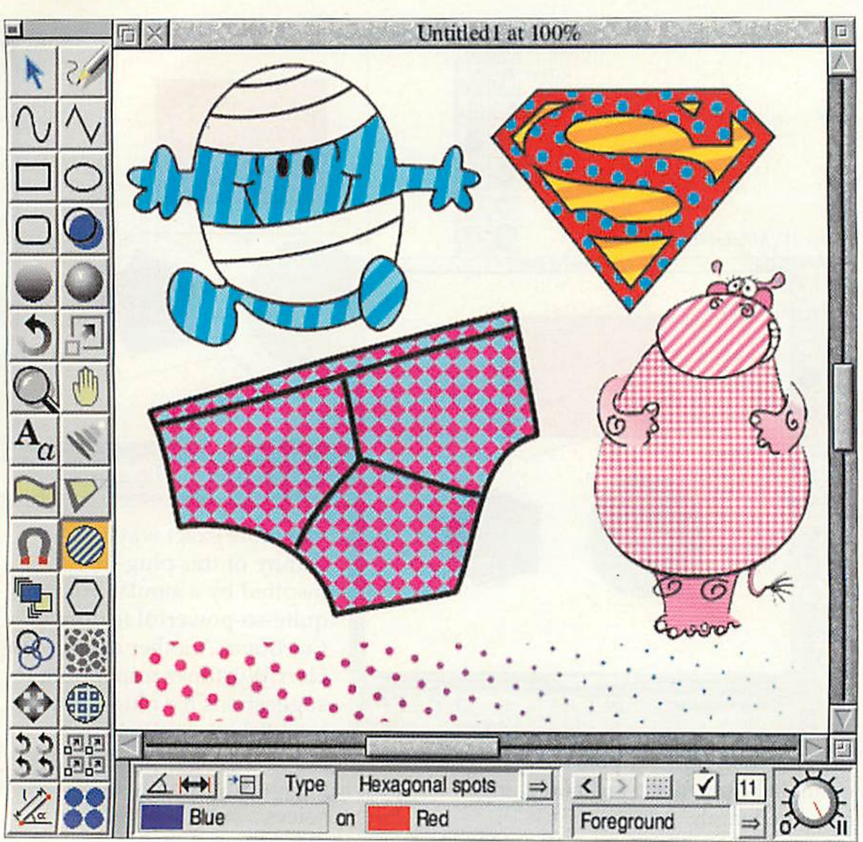


Figure VI: Some of HatchPro's simple fill styles

practice and experimentation which help you understand the many functions and effects.

Replicate – The ability to replicate arbitrary *ArtWorks* objects in regular patterns many times without consuming any extra memory is the feature of this plug-in module. Six patterns are provided: Matrix, Matrix outline, Matrix chequered, Diagonal, Diamond and Diamond outline. The replication type, number of replications and offset between replications can be changed at any time. Such replicated objects behave like any other single *ArtWorks* object and as such can be moved, rotated or scaled. The detailed help file describes some advanced features allowing change of more parameters like x and y offsets.

T_Draw – Supplied with *Replicate* and described as an enhanced replacement for the original *T_Draw* module. *Replicate* fixes problems with the *Draw* translation interface.

Current versions

- Polygon 1.20
- Translate 1.04
- Intersect 1.05
- ShowXY 1.00
- PathUtils 1.01
- MadnessT 1.00
- QuickCopy 1.03b
- AlignPlus 1.04
- AutoSave 1.00
- MRotate 1.01
- ZoomPlus 0.05
- MScale 1.01
- PathTool 0.05
- Filter 1.05b
- Hatch 1.05b
- HatchPro 1.13
- Replicate 1.05

Clearly Martin has been a one-man programming machine and has done more than anyone else to further the *ArtWorks* plug-in concept. Many users will be very grateful for his efforts.

Hatch and HatchPro

This is a major commercial plug-in package where the *Hatch* module needs to be run in conjunction with the supplied *PathTool* module.

The original *Hatch* provided additional pre-defined fully customisable fill types. *HatchPro* allows you to define your own fill styles by turning any vector shape into a fill pattern. User control of the colours and various numeric parameters of any fill style leads to a countless number of variations. The fill patterns are not held in memory but rendered on the fly.

The module is fully integrated with the rest of *ArtWorks* so you can blend between pattern filled objects, export them as *Draw* or *EPS*, use Undo or Redo and so on. An important point to remember with *Hatch/HatchPro* is that *Impression* (and, indeed, any other application that reads *ArtWorks* files) is not able to render files containing objects with any of the new fill styles. You must, therefore, remember to export as drawfiles which will then be accepted and displayed correctly in such applications. Both *Hatch/HatchPro* are supplied with a profusely illustrated A5 manual, making these very professionally produced *ArtWorks* plug-ins.

The future

Though *ArtWorks* is not being developed any further by CC, it certainly is not dead. There is still much useful mileage to be obtained from this proven product. The existing plug-ins each increase functionality and there's scope for new ones to be added. As for support, CC/Xara have confirmed they are supporting existing users and will offer what help they can to people developing plug-ins. Similarly, Martin Würthner has indicated on his Web site that he too will help and requests new plug-in authors to contact him to avoid duplication of any work which might be in progress.

By the time you read this, a new and much hyped competitive rival product should be available and some of you will take advantage (pun intended!) of that. For the rest it is worth noting that there is still life in the old (*ArtWorks*) dog yet! Enjoy it all while you can.

Würthner contacts

Martin Würthner's Web site is well worth a visit at: http://www.flipside.co.uk/awtools/
or e-mail him at: wuerthne@droste.informatik.uni-stuttgart.de
The range of shareware and commercial prices and their site licences coupled with special offers and e-mail or snail-mail delivery options is too great to print here and perusal of Martin's Web site is vital. Computer Concepts still have a Web site at: http://www.cconcepts.co.uk/support/awmod.htm with some plug-ins to download. For *ArtWorks* support contact David Matthewman at: david@xara.com END

Product details

Product:	ArtWorks plug-ins
Price:	See Web site or contact WSS for details
Supplier:	Warm Silence Software, PO Box 28, Woodstock, Oxfordshire, OX20 1XX
Tel/Fax:	01608 737 172
Mobile:	0585 487 642



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Planetary visions

Trevor Attewell gets his atlas out

Planetary Visions Ltd are producers of high quality satellite images. Their most recent work has been the creation of an image of the whole Earth, with a resolution of one kilometer per pixel. It is a true-colour image, absolutely free from cloud. It offers a considerable improvement over the previous whole Earth image, completed in 1990 by the American artist Tom van Sant and the California GeoSphere Project, at 4km per pixel. Planetary Visions chose RISC OS computers to carry out some of the very complex work involved, using Spacetech's *Photodesk* application.

How was this new image achieved? It is a fascinating story, and a long one. Inevitably it started with a huge collection of images, each showing a small section of the Earth. These could only be provided by satellites, a number of which routinely transmit information about various aspects of the earth's surface. Unfortunately many of these satellites were unsuitable for various reasons. For example, geostationary satellites such as Meteosat are roughly 32,000km away, and sit directly above the junction of the equator with the Greenwich meridian. Hence they can see only one hemisphere.

To scan the whole earth requires polar orbiting satellites. These have fixed orbits, crossing over the north and south poles, while the Earth rotates on its axis beneath them. Some of these, such as Landsat and SPOT, do not fully cover the Earth's surface, which is a pity, since they produce maps with high resolution and these would have been most welcome. This leaves the NOAA polar orbiters. They are about 850km from the Earth's surface, take 102 minutes to complete each orbit, and they map the whole of the Earth's surface in slices.



How's your colour vision?

Planetary Visions make use of NOAA's Advanced Very High Resolution Radiometer, which measures the radiation it receives from the Earth's surface in five frequency bands, of which only a red band is in the visible spectrum. Another band is in the near-infrared, and it is possible to combine these unlikely components to produce false 'colours', which can then be interpreted to



reproduce surprisingly accurate colours of deserts, foliage, and other features. Collecting this information from the satellite required the cooperation of 26 receiving stations in 19 countries, involving six different space agencies. About 30,000 useful images were obtained.

The basic data was supplied to Planetary Visions by the US Geological Survey in batches, containing data for each of the two bands separately, and requiring about 70Gb of storage. Planetary Visions had installed an impressive stack of harddiscs to cope with this deluge. They knew that there were many problems ahead in working with this huge amount of patchwork information, but could not have known just how difficult it would be, let alone how long it would take.

Looking at the headaches in no particular order, we begin with the data dropouts. Satellite pictures are not perfect, and may contain bad pixels. Some of these are due to lightning storms of which, on average, there are about 2000 in progress at any given time on the Earth, yielding 100 discharges every second. Most are in the tropics, falling off to virtually none in polar regions. Nearby flashes can cause glitches in transmission. The on-board equipment may rubbish an occasional pulse on its own account, and small errors in the critical satellite tracking system can produce the equivalent of drop-outs. Every 'bad' pixel in the image had to be corrected by hand to fit in with its surroundings.

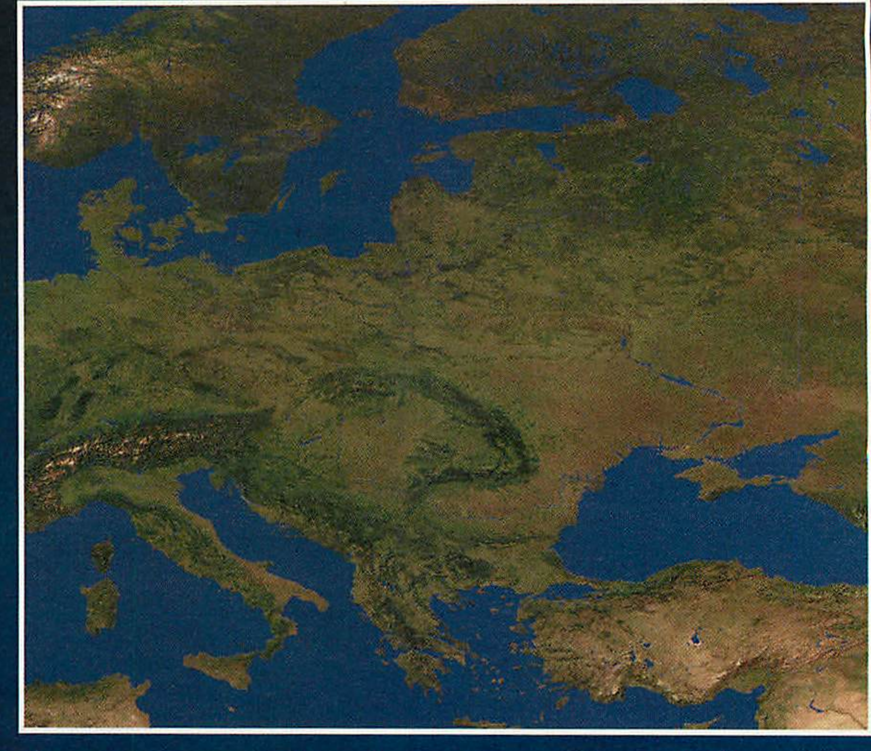
Invisible darning

Another problem arises when two areas from different satellite passes must be joined. There will always be differences between individual pixels in the

overlap, from which the best overall picture must be assembled. It could be done manually, but that would be impossibly tedious and subject to error. Of two possible scientific methods Maximum Vegetation Indexing was chosen. This involves finding the ratio of the reflectivity of vegetation in the red band to that in the infrared for each pixel. The higher this ratio, the more likely it is that the pixel represents vegetation, and not cloud.

Bearing in mind that the data has to be collected over many months, covering the same area many times, vegetation will show changes in colour, and some will disappear for a time, for example, the leaves on deciduous trees in winter. To get around this, the areas in question may have to be masked, and suitably matched.

A composite of two areas can show up differences in brightness (Radiometric Error) or inaccurate registration (Geometric Variations). These errors can only be corrected manually, which demands a great deal of patience and practice. A distressing amount of early work had to be scrapped while the necessary skills were being honed.



No silver linings

Clouds are an obvious problem and they can hang around for a very long time, especially the orographic clouds which often appear abruptly over high ground. It can take as long as a year to get a good image, made up from bits and pieces as they become temporarily visible. Active volcanoes can erupt for short or long times, obscuring significant areas, and there are a surprising number of them.

Seasonal problems have already been mentioned – but here is another. A large area around each pole is mostly dark during its winter season, and the satellite cannot see much detail. This means that northern areas must be examined mostly between June and August, and southern areas between November and February. Climatic conditions also show long term variations. For example, parts of Canada and Russia are hidden beneath heavy snow for months at a time.

As mentioned earlier, the 'colours' obtained from satellite data are not natural to us, and must be converted to standard RGB format. This was done by creating a look-up table, entered with the pixel values obtained from the satellite, from which the RGB values could be read off. The table was continuously refined as the work progressed.



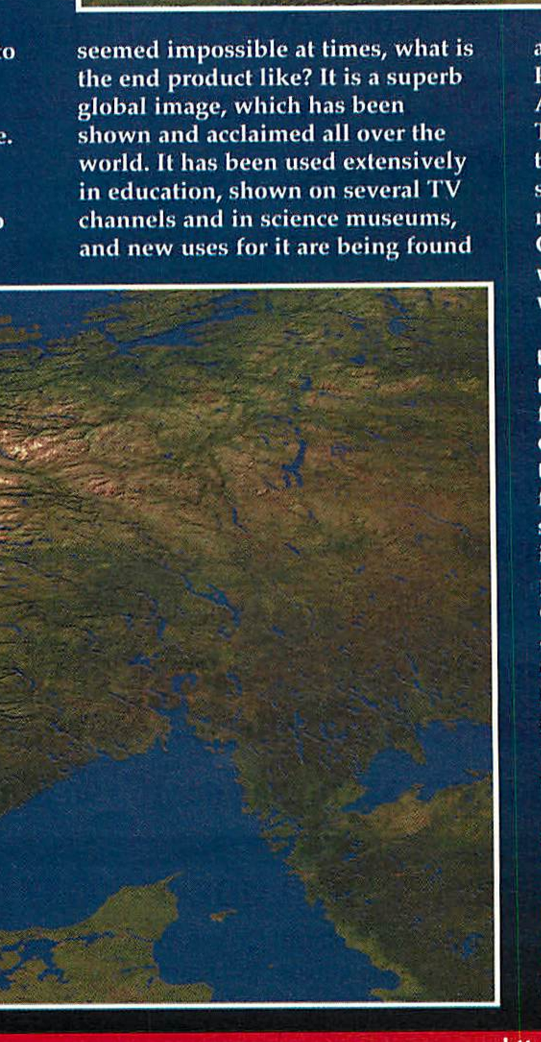
Water, water everywhere

So far nothing has been said about the sea, lakes and rivers which cover nearly three quarters of the Earth's surface. These were all masked out in the original data, because they would have interfered with the process for separating vegetation from cloud. Putting them back required more data, this time from the NASA Nimbus 7 satellite, which carries a suitable scanner. This makes use of the chlorophyll

contained in phyto-plankton to provide the sea colours. It does not function properly in shallow water, so coastal areas, lakes, atolls and rivers were filled in using Space Shuttle photographs.

When taking the oceans out of the original data many small islands vanished with them, including even Hawaii. These had to be replaced from Shuttle pictures, plus data from ship sonars. Another problem appeared with certain rivers, parts of which failed to show up, while other parts upstream were visible. The reason lay in the changing width of the river, which was sometimes more, and sometimes less, than the 1km resolution available. This also had to be corrected by hand.

The loss of the oceans meant that no sea ice was present, but the permanent ice around the poles is an important fixed feature, which must be shown. Data for this had to be found, this time from the Defence Meteorological Satellite Programme via the Ice Data Centre.



See it if you can

After several years of struggling to overcome odds that must have seemed impossible at times, what is the end product like? It is a superb global image, which has been shown and acclaimed all over the world. It has been used extensively in education, shown on several TV channels and in science museums, and new uses for it are being found all the time. For example, Dorling Kindersley are releasing a World Atlas which makes good use of it. This should be available before this article is published, and it should bring a new reality to map reading. They will also be issuing a CD with which you can scan the whole globe, zooming in and out at will.



The pictures accompanying this text are necessarily scaled down to tiny sizes and in fact are not the final proofs (as you can see the oceans are not textured). Perhaps the following off-beat (but true) facts may give some idea of the sheer size involved. The complete image contains 43,000 x 31,600 pixels, at 24-bits per pixel, equivalent to a 2.7Gb file. Printed at 150dpi, the full picture would measure roughly 24ft wide x 12ft high. To display it full size and at full resolution on a multiple screen would require a stack of 1,485 standard monitors.

This is not the sort of imagery that most people would want to buy for personal use, but if you are seriously considering a business application, you can contact Planetary Visions Ltd on 0171 504 2093, or by e-mail: Tildsley@ge.ucl. ac.uk

END

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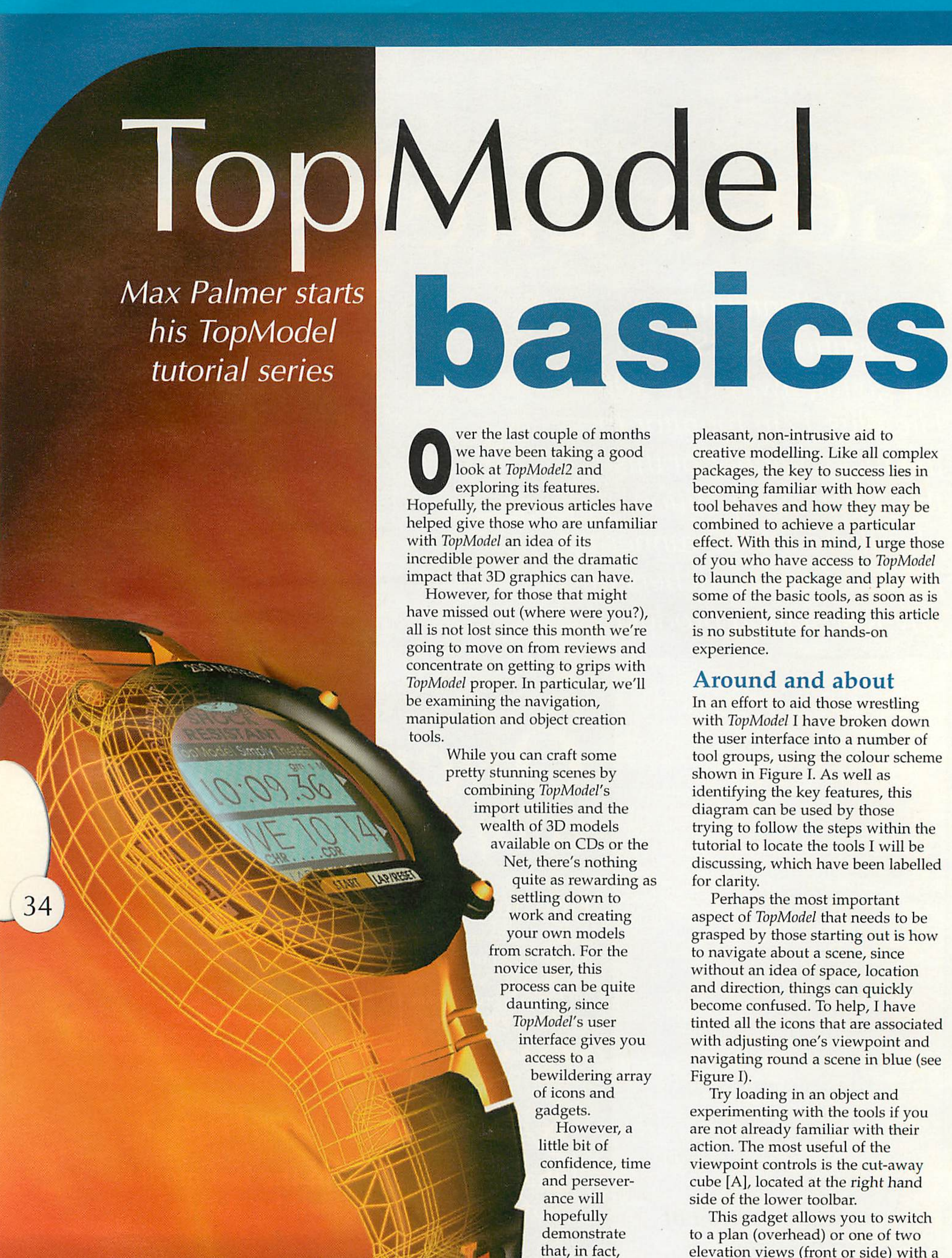
How to enter

As this is such a big prize we're running a very special three-part competition: In this issue and the next two issues of *Acorn User* we will be supplying a competition question, three parts in all. In the February issue you fill in the answers to each of the questions, complete a tie-breaker and send in the coupon.

R7500 Lite Question 1

What was the name of the last model of computer released by Acorn?

Don't send in your reply now, there are two more questions to come



TopModel basics

Max Palmer starts his TopModel tutorial series

Over the last couple of months we have been taking a good look at *TopModel2* and exploring its features. Hopefully, the previous articles have helped give those who are unfamiliar with *TopModel* an idea of its incredible power and the dramatic impact that 3D graphics can have.

However, for those that might have missed out (where were you?), all is not lost since this month we're going to move on from reviews and concentrate on getting to grips with *TopModel* proper. In particular, we'll be examining the navigation, manipulation and object creation tools.

While you can craft some pretty stunning scenes by combining *TopModel*'s import utilities and the wealth of 3D models available on CDs or the Net, there's nothing quite as rewarding as settling down to work and creating your own models from scratch. For the novice user, this process can be quite daunting, since *TopModel*'s user interface gives you access to a bewildering array of icons and gadgets.

However, a little bit of confidence, time and perseverance will hopefully demonstrate that, in fact, what appears to be a cluttered interface is actually a very pleasant, non-intrusive aid to creative modelling. Like all complex packages, the key to success lies in becoming familiar with how each tool behaves and how they may be combined to achieve a particular effect. With this in mind, I urge those of you who have access to *TopModel* to launch the package and play with some of the basic tools, as soon as is convenient, since reading this article is no substitute for hands-on experience.

Around and about

In an effort to aid those wrestling with *TopModel* I have broken down the user interface into a number of tool groups, using the colour scheme shown in Figure I. As well as identifying the key features, this diagram can be used by those trying to follow the steps within the tutorial to locate the tools I will be discussing, which have been labelled for clarity.

Perhaps the most important aspect of *TopModel* that needs to be grasped by those starting out is how to navigate about a scene, since without an idea of space, location and direction, things can quickly become confused. To help, I have tinted all the icons that are associated with adjusting one's viewpoint and navigating round a scene in blue (see Figure I).

Try loading in an object and experimenting with the tools if you are not already familiar with their action. The most useful of the viewpoint controls is the cut-away cube [A], located at the right hand side of the lower toolbar.

This gadget allows you to switch to a plan (overhead) or one of two elevation views (front or side) with a single click on one of the cube's faces. Clicking Select on the cut-away face in the middle of the icon switches to a 45 degree view, while

Figure I: Breakdown of TopModel2's user interface showing the location of functional groups and key features mentioned in the text. These include tools for navigation (green), object manipulation (red), object creation (yellow), general information (cyan), animation (pink) and altering the environment (blue)

clicking Adjust yields the same view but from the opposite 'side' of the scene.

On the left-hand toolbar, there is a group of three more icons which relate to your viewpoint. The magnifying glass [B] enables you to zoom the conceptual camera in and out, while clicking Select on the hand icon [C] will bring up the rotate cursor which allows you to rotate the view about the origin. These two modes can also be invoked directly by pressing Control while holding down Select for zoom or Adjust for rotate.

As well as being able to rotate and zoom, clicking Adjust on the hand icon or holding down Shift and Control invokes translate mode, which allows the scene to be panned relative to your original viewpoint. This can be done by dragging the pointer in the direction you wish to scroll, while holding down Select.

If more precise control is needed, you can enter values in the Pan/Rotate/Zoom dialog accessible from either the hand or magnifying glass icons. Finally, named views can be stored and recalled using a menu system which can be accessed via the eye icon [D].

Once you've mastered the art of navigation, it's worth taking time to understand the different types of structure that *TopModel* uses to construct objects, and how these structures come together to form more complex units. Although this may be considered simplistic by many, gaining an understanding is vital for learning how objects can be manipulated, so I believe it's worth spending a bit of time going over the basics. Figure II illustrates the three types of 'building block' used within *TopModel* and shows how they relate to each other.

Points are the most basic of *TopModel*'s building blocks and represent a location in 3D space. While you can't create a single point directly, all rendered objects consist of a series of interconnected points which are grouped together to form the skin of a model. Such groups typically consist of three or four points, and are referred to by *TopModel* as primitives, but are probably better known by you and I as polygons.

While it is possible to create a polygon directly within *TopModel*, it would be tedious to have to create six square faces every time you wanted to make a cube, for example, so *TopModel* provides a suite of higher level tools to allow complex shapes to be created with relative ease, such as a cube or pyramid. These shapes are formed from a collection of primitives (polygons), which are themselves made up of three or four interconnected points. Since all the points in the object are connected via the polygonal mesh, they are said to form a net of primitives, which represents the most complex type of polygonal structure within *TopModel*, other than a user-defined group. So there we have it, the three levels of structure: points, primitives and nets. Simple eh? Well, almost...

Bezier surfaces

In fact, there is another type of structure used by *TopModel*, known as a bezier surface. Although a bezier surface also consists of points and primitives, it is not actually made up of polygons and this is what distinguishes it from the type of objects we have just been discussing. *TopModel* actually provides two completely different types of objects known as bezier surfaces and polygonal meshes. Each are made up of points, primitives and nets (Figure III).

However, while the points in a polygonal object define its exact shape, the points associated with a bezier object are used to mould the shape of a surface, which defines the object's shape. This is such an important concept that it is worth repeating. Bezier surfaces describe an

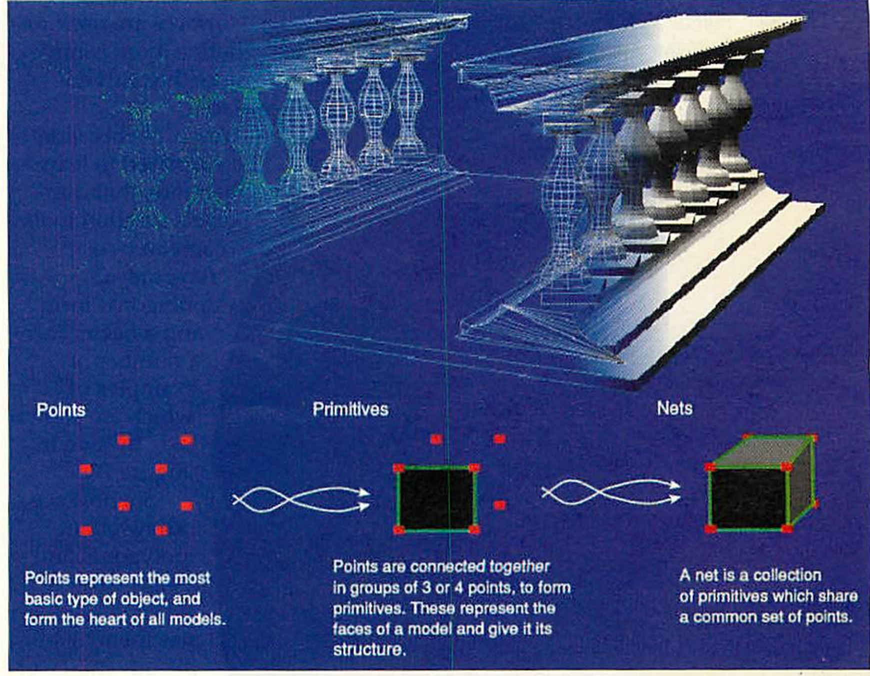


Figure II: The three main polygonal structural groups: points, primitives and nets

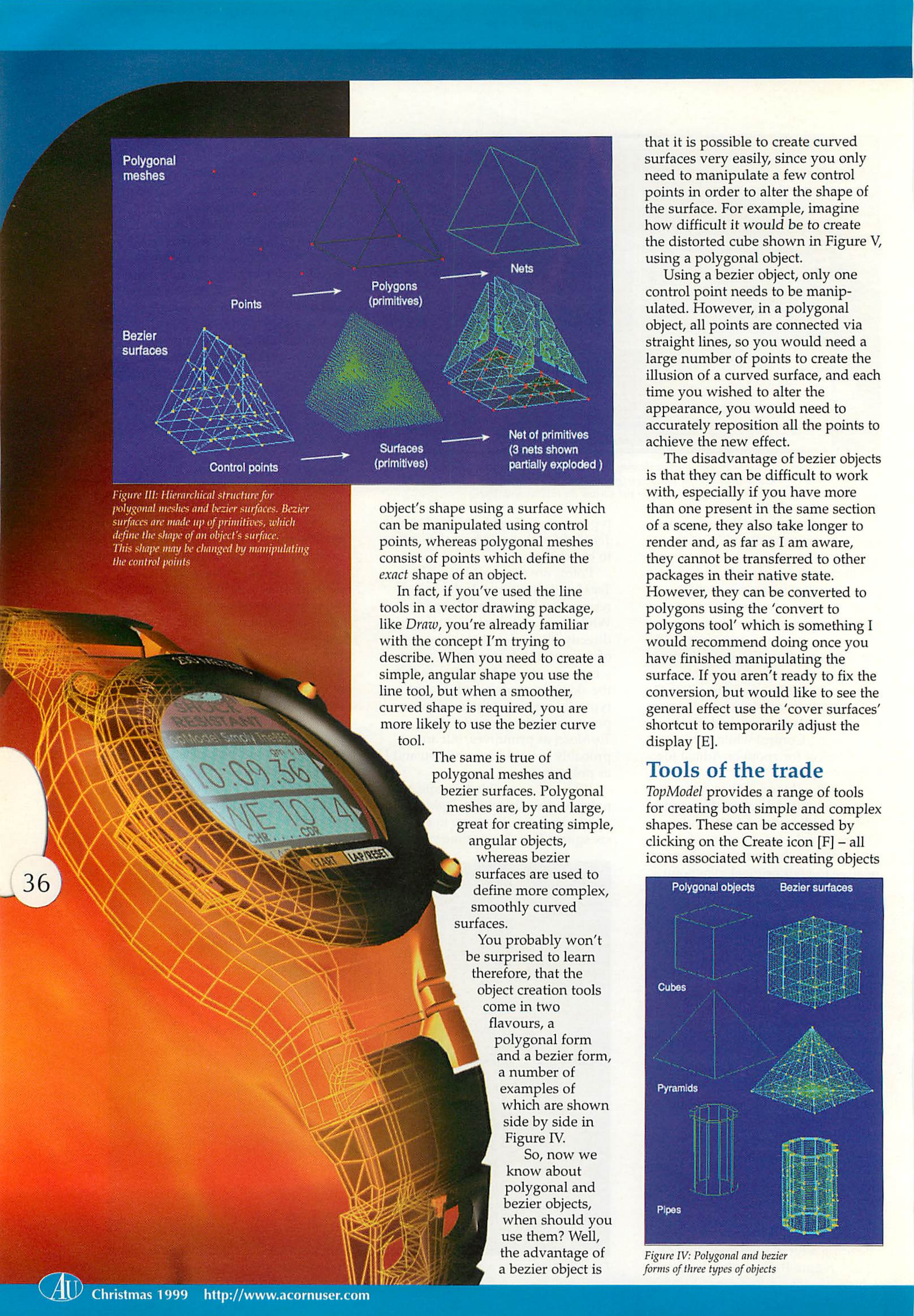


Figure III: Hierarchical structure for polygonal meshes and bezier surfaces. Bezier surfaces are made up of primitives, which define the shape of an object's surface. This shape may be changed by manipulating the control points

object's shape using a surface which can be manipulated using control points, whereas polygonal meshes consist of points which define the *exact* shape of an object.

In fact, if you've used the line tools in a vector drawing package, like *Draw*, you're already familiar with the concept I'm trying to describe. When you need to create a simple, angular shape you use the line tool, but when a smoother, curved shape is required, you are more likely to use the bezier curve tool.

The same is true of polygonal meshes and bezier surfaces. Polygonal meshes are, by and large, great for creating simple, angular objects, whereas bezier surfaces are used to define more complex, smoothly curved surfaces.

You probably won't be surprised to learn therefore, that the object creation tools come in two flavours, a polygonal form and a bezier form, a number of examples of which are shown side by side in Figure IV.

So, now we know about polygonal and bezier objects, when should you use them? Well, the advantage of a bezier object is that it is possible to create curved surfaces very easily, since you only need to manipulate a few control points in order to alter the shape of the surface. For example, imagine how difficult it would be to create the distorted cube shown in Figure V, using a polygonal object.

Using a bezier object, only one control point needs to be manipulated. However, in a polygonal object, all points are connected via straight lines, so you would need a large number of points to create the illusion of a curved surface, and each time you wished to alter the appearance, you would need to accurately reposition all the points to achieve the new effect.

The disadvantage of bezier objects is that they can be difficult to work with, especially if you have more than one present in the same section of a scene, they also take longer to render and, as far as I am aware, they cannot be transferred to other packages in their native state. However, they can be converted to polygons using the 'convert to polygons tool' which is something I would recommend doing once you have finished manipulating the surface. If you aren't ready to fix the conversion, but would like to see the general effect use the 'cover surfaces' shortcut to temporarily adjust the display [E].

Tools of the trade

TopModel provides a range of tools for creating both simple and complex shapes. These can be accessed by clicking on the Create icon [F] – all icons associated with creating objects

Figure IV: Polygonal and bezier forms of three types of objects

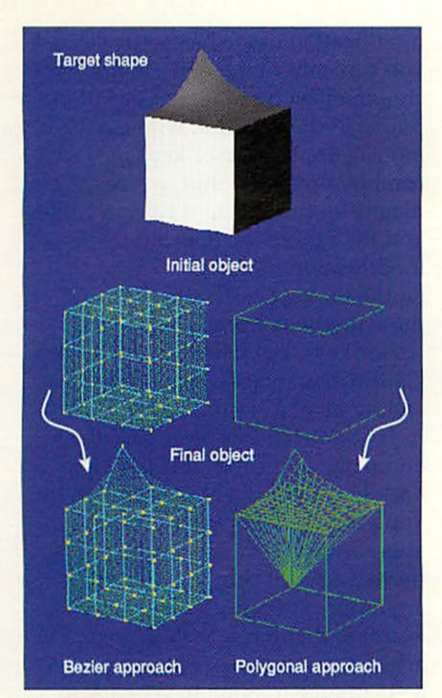


Figure V: The power of bezier surfaces. The target object can be easily produced using a bezier surface, but requires considerable more work to create using polygons

have been shaded yellow in Figure I. Although the behaviour of most of the create tools is self-explanatory, it is worth spending some time investigating what each tool does if you're not already familiar with their action. Note, to do this, you will often have to switch views while creating an object in order to see exactly what's happening in all three dimensions.

Once you are familiar with a tool's basic behaviour, try adjusting some of the default parameters and radio button settings, or enter values directly to see how they affect the shape of the object being created. If you have time, it's also worth playing around with the bezier versions of the tools.

As you probably have gathered from the previous section, these are very powerful, however, they are also quite difficult to get to grips with, so don't worry if you find them confusing initially. There's an awful lot you can do in *TopModel* without ever needing to use a bezier surface.

Selective manipulation

While the creation tools are obviously vital for modelling, more often than not their use represents only the first stage of the design process. A far larger proportion of one's time is often spent modifying objects in order to achieve a particular effect. By modifying I mean moving, copying and rotating points, nets and primitives as well as applying various deformations.

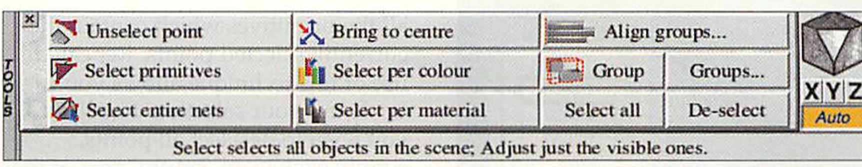


Figure VI: The Select menu allows different methods of selcting objects; through colour, texture, groups, and so on

Before you can apply any kind of modification, you need to select the items you wish to alter. In the end, the selection process comes down to highlighting a point or group of points which you wish to alter in some way. There are however several methods by which a selection can be made and these are all listed on the selection toolbar (Figure VI).

In addition to being able to select by material, colour and group, it is possible to select by point, primitive and net (see Figure VII). Because of this a duplicate set of icons appear on the left hand *TopModel* toolbar. As you would expect, 'select by point' [G] allows individual points to be selected, while 'select by primitive' [H] selects the points that make up individual polygons or sections of a bezier surface. Finally, 'select entire nets' [I] will select a net of connected points.

However, rather unusually, it will not select a group of apparently related bezier surfaces. This is because the points which lie along a join between two or more sections are not actually shared between the objects, but are a collection of superimposed points, with one point per surface. Care must therefore be taken when manipulating the joins between bezier sections to make sure that all the required points have been selected before any modifications are carried out. Selected points remain selected as long as you don't actively deselect them.

As a result you are free to change the display mode, alter your viewpoint and change the selection mode at any time without affecting your current selection. You can add to a current selection by clicking Adjust, at or near the location of the object/primitive/point you wish to add, while clicking Select selects the new object while deselecting all others – as in applications such as *ArtWorks*.

You can also select a group of points or nets/primitives within a rectangular area by dragging out a marquee (dotted box) with the mouse. However, care must be taken when using this technique since it is possible to accidentally drag the current selection as opposed to adding or reselecting a new group of points.

One advantage of a drag over a click is that it ensures that all the points at a particular location are selected, as opposed to the point nearest to you along the 'line of sight'. If you make a mistake and select some points by accident, it is possible to deselect them without deselecting all the others currently selected by holding down Shift while performing a marquee drag with the mouse.

Another useful selection technique (and one regularly used by the program's author) is to select an individual point or group of points, and then to use Control+P to select

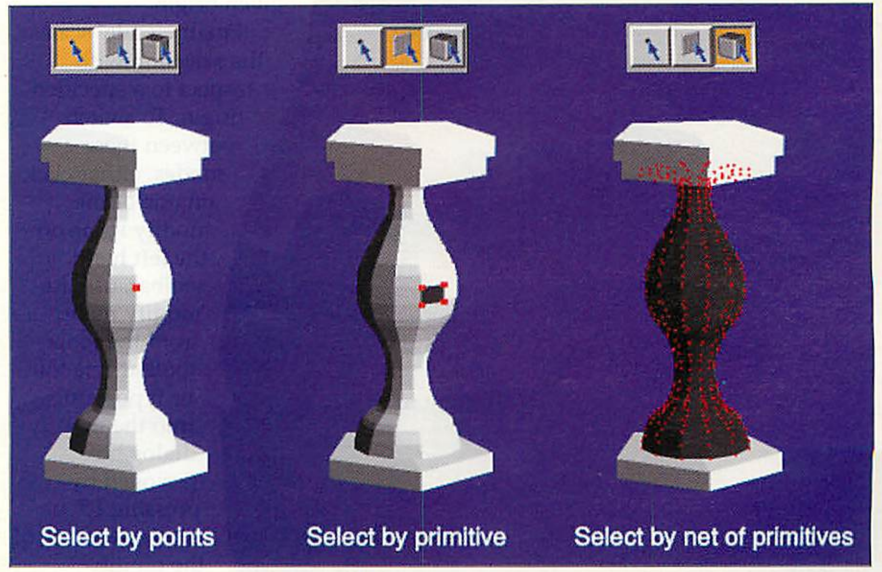


Figure VII: The three principal methods of selection



Figure VIII: The Modify dialog box

all the primitives which contain the currently selected points. Repeated use of this technique allows you to 'scale up' your selection. Finally, if you wish to deselect all points, simply click in an 'empty' area of the view.

If you have a complex scene, it is quite likely that you will have trouble selecting a particular point or group of points. This being the case you can do a number of things. First, it's quite useful to turn on 'object points' mode [via J], which will show you the location of all the points in your scene, regardless of whether a primitive is visible or not.

Secondly, rotate your viewpoint back and forth until you have a clear 'line of sight' to the point or primitive you are interested in. Finally, you can try turning on 'select visible points/primitives mode' [K], which, as the name suggests, will allow only visible points and primitives to be selected. Hopefully a combination of these three techniques will be enough to eliminate any problems you might be having.

Once you have selected the points, what can you do with them? Well, the answer is almost anything. However, the actions you are most likely to want to carry out involve the modifica-tion tools, namely: move [L], rotate [M] and scale [N].

'Move' allows you to move the points within the currently selected active plane (see the first article for more information about the active plane), while 'rotate' rotates the points about a given origin.

Finally 'scale' scales the selection with respect to a specified origin. To switch between these modes, either click on one of the modify icons on the left hand toolbar, use the modify menu from the tools toolbar [via O] or type values into the modify dialog box (invoked by pressing F5, or menu over one of the modify icons). Once a modification mode has been selected you can either interactively apply the chosen effect by dragging one of the points in the selection with the mouse; use the cursor keys in combination with Shift, which magnifies the effect; or type in values and then press the relevant modification button on the dialog box (Figure VIII). Of these methods I prefer to use the cursor keys, but usually enter values via the dialog box when rotating or scaling an object precisely.

If you do choose to enter values and make a mistake, it is easy to get back to your original distribution by applying the inverse transform or alternatively, set the undo buffer by pressing Space before you try anything experimental [P]. For example if you rotate 45 degrees around the wrong axis, simply apply a -45 degree rotation to get back to where you were.

This fix is worth remembering since one mistake you are likely to make time and again is rotating or scaling a selection using the wrong origin or about the wrong axis. However, in most cases you will probably wish to apply the chosen transformation locally. In such circumstances, use the 'bring to centre' button (shortcut: Control + Menu) on the edit menu [Q] to localise the currently selected group of points before applying the transformation.

The modification operations are just one example of a host of transformations which can be applied to a selection of points, since one of the main functions of a 3D package is to apply algorithms to a spatial distribution. Other types of operation supported by *TopModel* include different types of deformation and distortion, for example volumetric zoom and bezier distortion.

I could go on, but rather than overload you I think it's best to bring things to a close. I hope this month's article has introduced a number of concepts and techniques which you'll have fun trying out on your own designs. Next month we'll be seeing how the creation and distortion tools can be combined to tackle some real world applications. Until then, keep modelling... **END**

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Emulation euphoria

Alastair Bailey pretends he is something else

This month, Game Show takes a step back in time to the days when a ZX81 was the thing to have and all kids were well behaved. Yes, we're looking at emulation: basically, getting one computer platform to pretend it's another.

The first thing you'll need before you can get into emulation is an emulator. This is the software which tells your computer to look, act and feel exactly the same as the platform being emulated. Once you have the emulator running, you'll probably want some code for it to run whether it be a game or even something mortifyingly boring like a word processor. In the case of game consoles, these come in the form of ROM images which contain all the information stored on the original platform's cartridge, tape or CD.

As I've pointed out before, there are some nasty legal issues to be contended with when it comes to obtaining such ROM images. To put it simply, it's illegal to distribute such games while the original author still retains the copyright. You have been warned! However, some kind companies and individuals have released such game ROM images into the public domain for all to use. One fine example of this is Beam International who have recently released a number of their Spectrum/C64 and CPC games on the Internet for emulator users.

It seems rather silly that some parties refuse to relinquish copyright on their old and now non-commercially viable titles from yesteryear. Perhaps releasing older titles into the public domain would even do them some good through the positive PR gained. Anyway, enough moaning, on with the games!

Sonic 3 on the Sega MegaDrive

GameBoy

There are a number of emulators available for this little hand-held wonder, one of which even supports the new colour GameBoy ROMs. The definitive GameBoy emulator has to be *GameBoy* from Purple Monchichi which can be found on the 200th edition cover CD-ROM as well as by following the links on the Web sites below. If you want colour GameBoy support, get hold of a copy of David McEwen's *VGB* port. This emulator runs at an acceptable speed on a StrongARM but struggles on anything less, so if you're an ARM6/7 user, perhaps stick to the classic GameBoy games and a copy of *GameBoy*.

NES

The NES was Nintendo's flagship console for the late 80s. It was very popular in its day and this is reflected by the sheer number of titles which were released. There are two NES emulators out there for RISC OS, both are from David McEwen. *MadNES* is the faster of the two and is a port of Roberto's upcoming NES emulator for the PC. A NES emulator is essential if you're a *Mario Brothers* fan. There are countless thousands of *Mario* spin-off games to be found on this platform.



NES – lots of Mario Bros. stuff here!

Sega's Master System and GameGear

These two consoles also hail from the late 1980s. The GameGear was a nice little colour hand-held offering while the Master System was Sega's answer to Nintendo's NES. Miracle (http://www.willothewisp.demon.co.uk/SMS) is the definitive Master System emulator while Gareth Moore's *Sega* port and David's *MasterGear* both do a good job of emulating the hand-held and its big brother console within one application.

Sega MegaDrive

Unlike the other consoles covered here so far, the MegaDrive had a full 256 colours at its disposal along with much improved architecture which allowed for a leap in game graphics and sound. This means that many of the games on this



Amazing graphics... truly amazing

platform boast better graphics than some of the less fantastic native RISC OS releases of late. However, the emulator, *DGen* from David McEwen, is still under development and the version I have here is a little slow and lacks sound. It is labelled as a 'dodgy beta' though, so hopefully there'll be a far superior version out by the time you read this.

SNES

So far as performance goes, the SNES was quite similar to its Sega competition, the MegaDrive. One of the titles launched with this console, *Donkey Kong Country 2*, pioneered the 3D platformer-style which stuck with us right through the mid 90s. Gareth Long's *SNES9X* provides a reasonably fast emulation of the console but, as with *DGen*, it's still very much under development.

MAME

The MAME (Multiple Arcade Machine Emulator) project aims to preserve yesterday's arcade machines for future generations of games player. It does this by providing emulation of the hardware so that once the original hardware has become unusable, the games will not be lost for ever.

Even though this particular multi-platform project has strong roots in education and preservation, the distribution of copyrighted ROM images is still illegal. However, the hope is that one day, companies will smile upon the emulation scene and release their older games into the public domain.

The RISC OS conversion of MAME is maintained by Gareth S. Long. For this one, you'll almost certainly need a StrongARM chip and even if you have, some games will still run quite slowly.

That's all the space I have this month. However, if you take a look at some of the sites listed below, you'll find links to many other emulators including the superb Commodore 64 emulator, *Frodo*, and many others. Apologies for making this such an Internet-oriented article, those without access can find a number of emulators and free ROMs in the arcade directory on the 200th issue cover mount CD.

For ROM images, take a look at one of the following sites: http://www.romhq.com, http://www.davesvgc.com or http://anime-land.dhs.org/site/ (Please note that *Acorn User* magazine is in no way associated with any of these sites and does not endorse the use or distribution of copyrighted ROM images).

Alternatively, pop along to one of the popular search engines (like AltaVista, http://www.altavista.com) and do a search for the appropriate console format, adding "+ROM" on the end.

Many of the emulators currently being developed for RISC OS are in fact conversions of emulators written for other platforms. Emulator authors are often quite willing to let others see how their coding has been done because it's only very rarely that an emulator is written for commercial gain.

However, there was a recent case where the publisher of a PlayStation emulator for the PC/Mac was taken to court by Sony so it does happen on occasions but not, it would seem, in our sheltered little RISC OS world.

The continued development of good emulators for the RISC OS platform relies upon you, the end user, supplying the authors with bug reports and suggestions for improvements. So, if you do encounter any problems or feel you want to pat the author on the back for writing a jolly good emulator, be sure to look up their e-mail and do so!

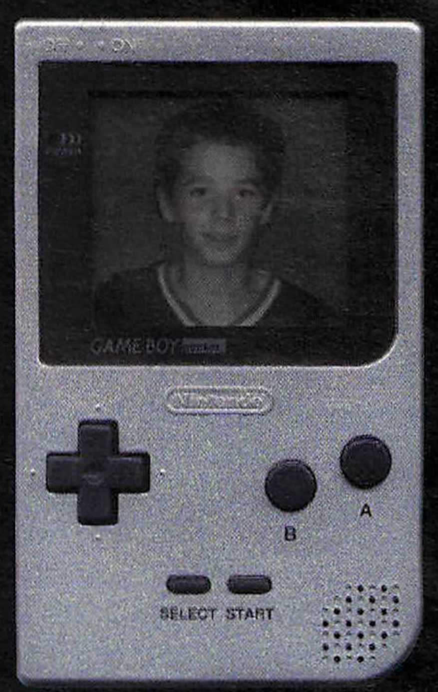
Where to get your gear

David McEwen's Web site (for *VGB*, *MadNES*, *MasterGear* and *DGen* amongst others): http://www.lizjay.demon.co.uk/david/

Gareth S. Long's Web site (for MAME, SNES9X and MESS): http://www.elecslns.demon.co.uk/

The Acorn Emulation Pages (a very comprehensive resource but sadly not regularly updated now): http://www.cybervillage.co.uk/acorn/emulation/

Acorn Gaming's emulation section (an up to date source of links and news): http://www.acorn-gaming.org.uk



A Nintendo GameBoy – the thing to be seen with in playgrounds across the country (!)

Other news

In other news this month, R-Comp should have had both the RISC OS *Quake* player and their long-awaited *Heroes of Might and Magic II* expansion pack, *The Price of Loyalty*, on sale at the RISC OS '99 show. Next month's column will include a full show report from a gaming perspective along with reviews of whatever makes it out in time.

Castle Herenae, the two player maze game previewed earlier this year, should be with us very soon too. In fact, your very own *Acorn User* games master is now studying at The University of Birmingham as is the game's author so keep an eye on these pages for more news as it happens! END

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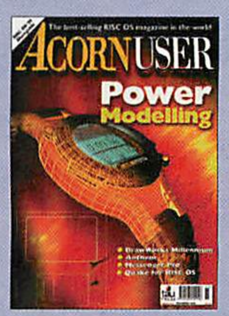
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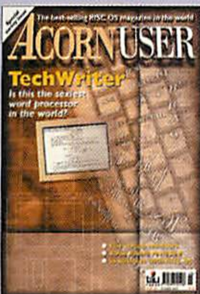
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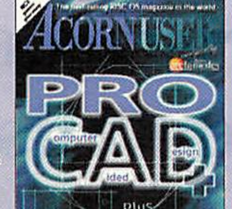
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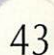
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Making the connection

Steve Turnbull checks out a low cost network idea

While many people are opting for home networks as they get newer machines, the interfaces and cables can be expensive. *ParaFS* provides a low-cost option for linking two machines in a practical way and at useful speeds.

The package, in a video-style box, comes with a small A6 manual with six pages of instructions and an 800K disc of software – the software itself only takes up 39K. You can get the package with the necessary parallel port cable to link the two machines or without, in which case you can use the instructions in the manual to make your own, though unless you wire things up all the time you might as well pay the small extra cost and avoid the hassle.

Installing the software is easy, you drag it from the floppy to the hard disc, or another floppy, or network – *ParaFS* isn't fussy where it's launched from though you can only run two copies at a time on a single-user licence (it's two rather than one since you need to have the software running on both machines).

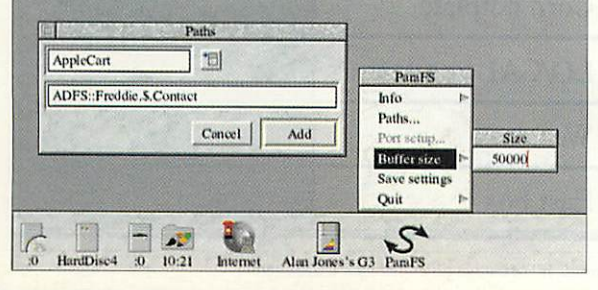
Plug in the cable, run the software at both ends and you're (almost) away. For each machine you now have to set up which drives you're going to allow to be shared – it's the same type of procedure you have to go through when setting up shared drives for Acorn *Access*.

To do this you use the Paths dialogue box from the iconbar menu, this is a fairly nifty bit of programming as it tries to figure out for you whether you are adding a new path; removing a path; or updating one. The action button is altered on the fly depending on whether you enter something new or change what's there.

It's not foolproof in its decision but mistakes don't cause any problems – tricking it into adding an already existent path doesn't create a duplicate. From a user interface viewpoint I think separate menu entries would be more helpful.

The paths themselves consist of the address path within the machine and an identifying name which will be seen on the second machine.

Once that's been done clicking Select on the *ParaFS* iconbar icon on the second machine displays the list of available shared directories from the first computer. This then behaves like the normal filer and can be treated as any other drive: you can load from it, save to it, launch applications from it and so on.



And that's all there is to it – apart from the bells and whistles: You can adjust the size of the buffer that's used for the transfer, 10K is the recommended minimum while 150K is the maximum. You can quit the application but keep the filing system itself running, and it will continue to operate even if a single-tasking application is running.

One disadvantage is that it monopolises the parallel port which means that you can't have a printer connected at the same time – there's no 'through' option unlike, say, a Zip drive.

So, does it work? Yes. There seems to be something funny about renaming, if you try to rename a file on the other machine an error box pops up – even though it does do the rename successfully. Apart from that the transfer speed is quite respectable and you can play games with connections:

If you have a *ParaFS* link to a machine on a network you can make it share the drives on the networked machines as well and at one point we had a PocketBook linked to an A4 with some link software; the A4 then connected via *ParaFS* to an A7000+ and we could manipulate the files on the PocketBook from the second machine.

So when you have that second machine and you want to have direct access to its files – rather than using 'SneakerNet' – *ParaFS* is an effective, useful and low-cost networking option. **END**

Product details

Product:	ParaFS
Price:	£22.95 (£29.95 with cable)
Supplier:	Stuart Tyrrell Developments, PO Box 183, Oldham, OL2 8FB
Tel:	01706 848 600
Fax:	0870 164 1604
E-mail:	info@stdevel.demon.co.uk
Web:	http://www.stdevel.demon.co.uk/

Nets get giffing

Simon Melhuish investigates Internet data logging and on-the-fly GIF creation

One of the most exciting features of the Internet is the ability to get live and up-to-date information from anywhere on the planet – for example, you could get a headline news item, or a picture from a Web cam. In this article I'll be looking at sending numbers over the Net, and how we can monitor a numerical value on a remote computer. Data in its simplest form can be presented numerically, one way or another.

I'll also be looking at a technique for generating Web pages featuring graphs as GIF images. The programs to generate these pages, and the associated GD GIF library, can be found on the *Acorn User* Web site. Those not running network servers might also find the programs of interest for their GIF-creation functions.

Use your finger

If you followed my *ThermIIC* series in *Archimedes World* last year you'll have already seen some simple techniques for monitoring values over the Net; in that case, temperatures. I'll give a brief summary before moving on to something more sophisticated.

The first method was to run a finger server. Finger is an Internet protocol that allows you to find out about users on a remote machine. If you know somebody's User ID on a computer connected to the Net, you would type finger user_id@remote_computer at the command line. There are clients with their own windows too; in their case you'd type the User ID and computer name into a dialogue box. Either way, you'll get back some information on the user: perhaps their full name and maybe their plans to take over the world! Actually there's nothing fancy about the finger 'protocol'. All that happens is that your computer makes a 'telnet' connection to the remote computer on its finger port (port number 79), to talk to a 'finger daemon'.

The User ID is then sent, and the daemon replies with some information provided by the user or system administrator. To do this on RISC OS you will need a finger server, such as FingerD (see the links page on the *Acorn User* Web site).

Normally this reads its data from files within the application (set up for each user) which you could arrange to be updated from time to time, as required. Better still, you can extend the server code by adding your own BASIC library functions, then the server will run your program to generate a completely up-to-date response whenever anyone connects. The code I wrote for *ThermIIC* is on the *ThermIIC* Web site (see the links page).

The finger server technique allows you to connect to anywhere on the Net and check whatever values you wish. You can also write your own client to periodically do the equivalent, but write the results to a log file each time. I do this myself to record some housekeeping values from a machine in Tenerife, onto my local machines. Some knowledge of the socket protocol used by TCP/IP communications is required for this – but that is beyond the scope of this article. I suggest you examine the code of existing finger clients to see how it's done.

Better than a finger

One alternative to finger is to run a Web server. Pretty much any Web server will run user programs when requested, using what's known as the common gateway interface (CGI). This is typically what happens when you access a URL containing 'cgi-bin' with your Web browser. In my *ThermIIC* article I described how to create on-the-fly tables of temperature readings using a CGI program written in BASIC (Figure I), again, it's

5 GHz Equipment Temperatures

Lab rack	35.34° C
LO/CAL box	32.47° C
West hotplate	43.91° C
East hotplate	44.28° C
Corr. hotplate	39.87° C
LO/CAL hotplate	39.12° C
West box	26.12° C
East box	25.81° C

Figure I: HTML table generated by a CGI program

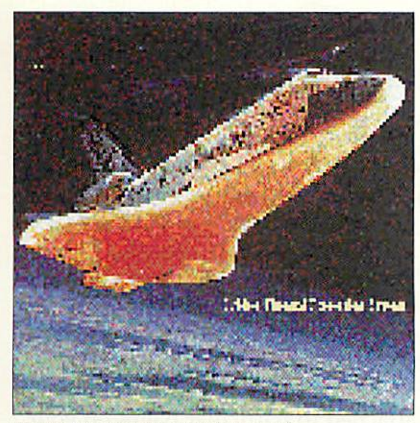


Figure IIa: Demonstration input and output GIF files to and from gddemo

on the *ThermIIC* Web site. There's virtually nothing to the tabulation code: because an HTML document is no more than a text file with a few tags added, the task is accomplished with PRINT statements. The values are recorded, converted to text and inserted as required. That covers the generation of reports in numeric form. Next, things will get more interesting as I turn to the generation of graphics. After all, the saying "a picture is worth a thousand words" is very probably true, although hopefully we can get the size down a bit using compression!

Graphing it out

The problem I faced in my own work was that, while I could see how my remote system was doing at any one time, I couldn't see any trend to the data (for instance, was my equipment about to melt?) unless I sat and stared at the screen for an hour.

What it needed was a graph. Obviously it is more difficult to generate an image file than text. At first I tried to tackle this by generating a sprite file, which I then converted to GIF using one of the common conversion programs. I made the sprite by re-directing screen output to a sprite area and plotting the lines of the graph.

However, it seems that the HTTP servers run CGI scripts from a task window, pre-emptively multi-tasked. Having a program 'swapped out' after it has redirected output to a sprite is bad news. My work-arounds were getting ugly and, besides, I didn't like having to run an extra program.

GD and the art of GIF

Fortunately a spell of Web searching led me to the GD library, by Thomas Boutell. You can find this yourself if you point your browser at http://www.boutell.com/gd/ The original does not quite compile 'out of the box' under Acorn's C/C++, so I've put my modified version on the *Acorn User* Web site.

There wasn't actually very much to do, other than adding a few extra 'include' statements. The best description of GD is its own documentation, which is provided as HTML. Load the *Index* file from inside the *!Gd1/3* application into a Web browser. There is also a text version - *Readme/txt*. If you're going to use GD with your own C applications you'll probably want to look at the 'header' files too. I have written a short introduction, below.

One of the programs supplied with the library is *gddemo*. As you can guess from the name this is to show you some of the library's facilities.

It starts with a GIF input file: *demoin/gif* (all filenames are relative to the *!Gd1/3* directory) - or you could substitute one of your own. Onto this it plots various lines, shapes and text and its output is written to *demoout/gif* - see Figure II. To view this file you should filetype it to 'GIF' (&695) and load it into a GIF viewer such as *ChangeFSI* or your Web browser.

Ready to plot

The result of my work with GD is *csv2gif*, which can be found on the *Acorn User* Web site. The source code is included so that you can modify it for your own purposes, although you will, of course, need a C compiler to create a modified executable.

The workings of the program are described below. From the user's perspective all you need to run it is a comma-separated-value (CSV) file, and a place to write the GIF. The CSV file must have the time at the start of each line in either of these formats:

```
dd/mm/yy hh:mm
dd/mm/yy hh:mm:ss
```

The year value may include the century or not. I *do* expect this to work and keep on working after 1999! Up to 32 values follow the date, each preceded by a comma. The program scans for decimal floating-point numbers, so you might have to



Figure IIb: Output from gdwcount and csv2gif on an example Web page using the chart CGI program.

GD basics

Any GD-based application will need to access the main header file:

```
#include "<Gd1_3$dir>.h.gd" /* gd lib */
```

You might need to include some other files too, perhaps for fonts.

GD defines a new type, gdImagePtr. You'll need one of these for any image you work with. Probably the first function you'll want to call is gdImageCreate():

```
im_out = gdImageCreate(width, height) ;
```

This takes width and height parameters, and returns a gdImagePtr. Next you'll need to define some colours. For example:

```
white = gdImageColorAllocate(im_out, 255, 255, 255) ;
```

Make a similar call for each colour. Now you're ready to start drawing on the image. The simplest calls are:

```
gdImageSetPixel(gdImagePtr im, int x, int y, int color)
```

and

```
gdImageLine(gdImagePtr im, int x1, int y1, int x2, int y2, int color)
```

There are many other types though.

You can plot text with gdImageString() or gdImageStringUp(). You must include a font header file at the start of your program to use these calls.

When your image is finished you should call gdImageGif() to write the GIF file. Finally, call gdImageDestroy() to tidy up.

When compiling your program, remember to link to <Gd1_3$dir>. libgd

Eight temperature channels plotted by csv2gif

load the FPEmulator module, this can be done by putting a copy in !Boot.Choices.Boot.PreDesk or by using RMEnsure. If *help fpemulator works, you're OK.

Used on its own *csv2gif* must be driven from the command line. For use with a Web server it needs some additional code in the form of a BASIC program for the CGI. I have provided two versions of a program called *chart* on the Web site. The version in the *cntr* directory is for use with the AlphaNet server. There is also a *cntr_np* directory for NetPlex users. It should not be difficult to adapt one or other of the programs for other Web servers.

In either case the program runs *csv2gif*, and causes the Web server to issue a 'redirect' message to the browser, which should then request the newly-generated GIF file.

If, when you try out the CGI program on your server, you do not appear to get any updates, it might be that your browser is keeping the files cached on harddisc – a problem with *Netscape* in particular – if so, you can force a re-load, usually by clicking (or Shift+clicking) the re-load button.

Need input...

So far I have not discussed the means of generating the data file, other than by alluding to my *ThermIIC* project. Indeed, if you want to monitor temperatures you should look at my earlier articles and the programs on the *ThermIIC* Web site.

But if temperature is not of interest I have another example which also makes use of the GD library and may be of use to anyone running an RISC OS Web server. This is a Web counter called *gdwcount*, and again it can be found on the *Acorn User* Web site. As for *csv2gif*, the source code is included for you to follow and modify if you like.

gdwcount is a rather basic Web counter. No fancy odometer lookalikes here, the program simply writes a number to a small GIF. 'Real' Web counters, which often use GD, usually stitch together more artistic GIF numbers. The CGI interface is called *cntr*, in the *cntr* and *cntr_np* directories for *AlphaNet* and *NetPlex* respectively.

So that the program can keep count, you have to specify the name of a CSV file, from which the previous count is read. After the GIF has been created, *gdwcount* writes-back the incremented count and the time. The file can track up to 32 values, so the CGI program reads an extra parameter sent as a query string appended to the URL, for instance /cgi-bin/cntr/cntr?0 for the first value.

As you will no doubt have guessed, the format of this CSV file is suitable for input to *csv2gif*. Thus you may run *csv2gif*, via its *chart* CGI program, to generate a Web page showing how accesses to your Web pages have ramped up with time. You can also have different counters attached to particular pages on your site.

These will be displayed on the chart as different-coloured lines. Figure III shows a test page with a counter and a chart showing the log from this and another page.

The use of *csv2gif* is not restricted to Web servers. You can use it to plot other CSV files using the command line. To call it manually use this form:

```
csv2gif in_csv out_gif width height
```

The dimensions are given in pixels.

I conclude with Figure IV, which is an example plot of temperature data logged by *ThermIIC*. END

csv2gif and gdwcount

The source to these programs may be found in the the *csv2gif.c* and *gdwcount.c* directories on the *Acorn User* Web site. Each program must be linked against *libgd* (in the *!GD1/3* directory) and the C library stubs. The makefiles provided should handle all this for Acorn C/C++.

I'll describe *gdwcount* first, since it's the simpler program. As with any C program, it is entered at function main. This first performs some housekeeping functions, such as reading command-line parameters. allocate_colours sets the GIF foreground and background colours, following the RISC OS-standard 16-colour scheme.

To find the previously stored count values the program starts just before the end of the log file, and searches backwards for a new line. The last line must follow this, so it is read in by read_line, with get_value picking up each of the stored values. Now that we have our starting pointing it is simply a matter of incrementing the appropriate count value by one, and printing it to the GIF with gdImageString. I'm using gdFontMediumBold, but you could change the definition at the head of the program if you like. Don't forget to include the corresponding font header file.

Finally GD is told to save the file in GIF format. The pre-processor directives around the RISC OS file-typing operation (_kernel_osfile 18) are to disable it should you wish to compile the program under Linux (or whatever).

csv2gif has many similar elements. This time the colour allocation is a bit more extensive, as there has to be a colour for each possible plot line. Actually I've been a bit lazy here, and the colours repeat after the first 8.

The read_line function is similar to that in *gdwcount*. It is used first to read each line of the log file to determine the minimum and maximum limits. Having established these, scaling factors may be set. Then on a second read-through of the file each point is plotted to the image (using points or lines) by plot_to_point.

Next the program prints the value and time limits as small text (gdImageStringUp prints text on its side, upwards from the bottom of the image). A small key is printed along the top. Finally the image is written to a GIF file.



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Starting to draw

(a guide for beginners)

Simon Anthony starts his basic guide to Draw

The *Draw* application comes free with all Acorn/RISC OS computers, so you may as well know what you can do with it. In this run-through you will not be expected to know the first thing about *Draw*, but it would be handy to know your mouse buttons and what each one does. The article will run through some of the basics so as to get you going usefully in the first month. First the program must be loaded…

Loading *Draw* is easy. Just double click Select on its icon in the Apps directory of your RISC OS 3.6 or above, or for earlier machines click on its icon in a filing system window (that is a window showing you what programs are available for use on a floppy, harddisc or Apps filing system). Figure I (below) is a screen shot, an electronic photograph (taken with *Paint*), of a RISC OS 4 computer's display. It shows that *Draw* has been loaded – a green pencil and compasses icon can be seen on the right hand side of the iconbar. This is the same icon which is used in the filing window. Don't confuse the icon which shows you where the program is and the one which tells you it is loaded and ready for use.

Fill colour

The Style menu is the best place to start once the program is running. The rest of this section will describe how this particular display status (as shown in Figures II and III) was achieved. In this example the Apps filing window has been closed, so as to prevent clutter on screen. The user – that was me at the time – has clicked the mouse Select button (the left hand button) once on the *Draw* icon on the iconbar. This action displayed a blank drawing area in a *Draw* window which is called <Untitled> until it is saved with some other name – you can see this by looking at the yellow bar that runs across the top of the *Draw* window in Figures II and III.

The Toolbox is the vertical column attached to the left of the *Draw* window. You can see from it that the rectangle tool has been selected. The mouse Menu button (the middle button) was then clicked over the white working area and the options 'Style' and 'Fill colour' and bright red were chosen.

This was done by moving the pointer over the arrow to the right of the option on the relevant menu until the coloured boxes were displayed in the 'Fill colour' sub-menu, and then the Select button was clicked on the red one. (If you want you can play around with the red, green and blue values until you get a colour you like the look of, then

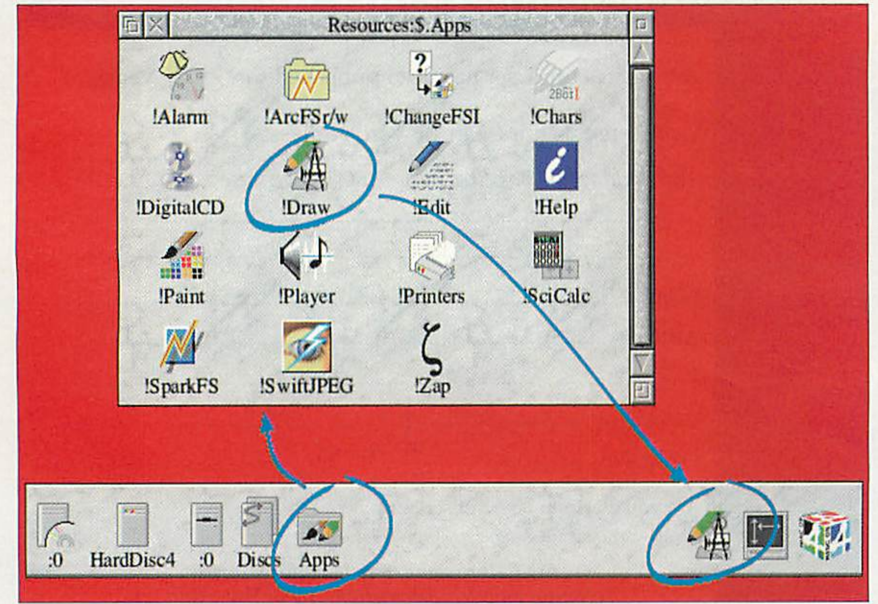


Figure I: To load Draw, double click on the Apps icon then on the Draw icon. Draw will then be loaded to the iconbar

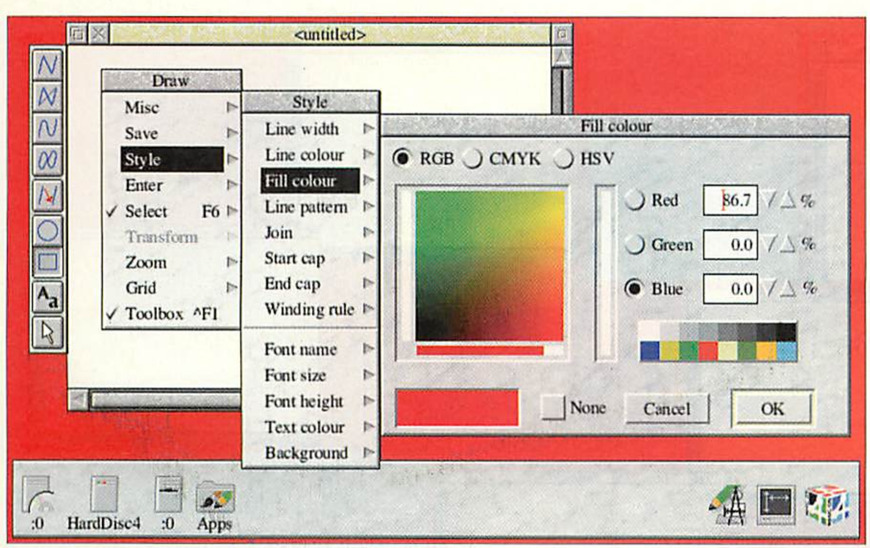


Figure II: Selecting a fill colour in Draw (RISC OS 4.02)

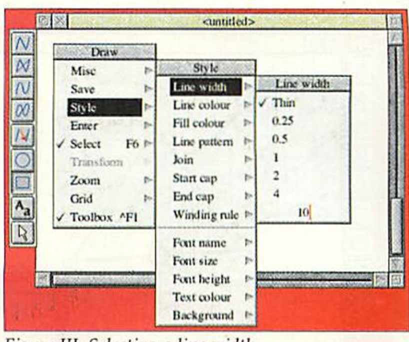


Figure III: Selecting a line width

click Select over the OK box to fix it for use.) Clicking Select to finalise the choice also closed the menu windows; clicking Adjust would have left them all open.

From now on anything drawn will be filled in red. It is essential to click on the OK box after making any change as this is the only way to tell the computer that you are serious about it, otherwise the alteration, if any, will be lost and the old settings will be used instead.

Under RISC OS 3.1, if the computer is in Mode 15 (a 256 colour mode), then the coloured boxes in the 'Fill colour' sub-menu window give you direct access to 16 colours, but the sliders allow you to choose between all 256 of them. On a Risc PC with millions of possible colours the setup is totally different, with a 'colour picker' to help you choose, as shown in Figure II.

Line width

As Figure III shows, the Style menu can also lead on to the sub-menu window used to alter the width of a drawn line. In this instance the 'Line width' sub-menu shows the enter-it-yourself option with a (massive) setting of ten points.

When 'Thin' is chosen the display and the printed output will always be one pixel wide whatever the magnification or zoom settings; this is the default. Any other setting will appear thicker or thinner depending on the display scale. (Zoom only alters the on-screen display, Magnification alters the real size as printed on paper.) The colour of a line can be altered from the middle menu shown in Figure III. Simply move the pointer to the 'Line colour' option and then follow your nose along the lines of the 'Fill colour' option mentioned above.

The rest of the options above the dividing line (dotted in RISC OS 3.x) on the 'Style' menu take a bit more thinking about. Leave them until you are feeling fit and healthy and have to hand either the full manual, or a later article in this series.

Text entry

Below the line in the Style menu come the options for altering the style of any text which you may wish to include in your finished drawing. *Draw* is not a word processor and should not be treated as one, but the text option can be used for making headings or captions on posters and pictures as well as for handling masses of text imported from *Edit*.

Text entered in *Draw* is handled a line at a time, with the length of each line determined by pressing Return. Each line of text is a separate object which can have a different size,

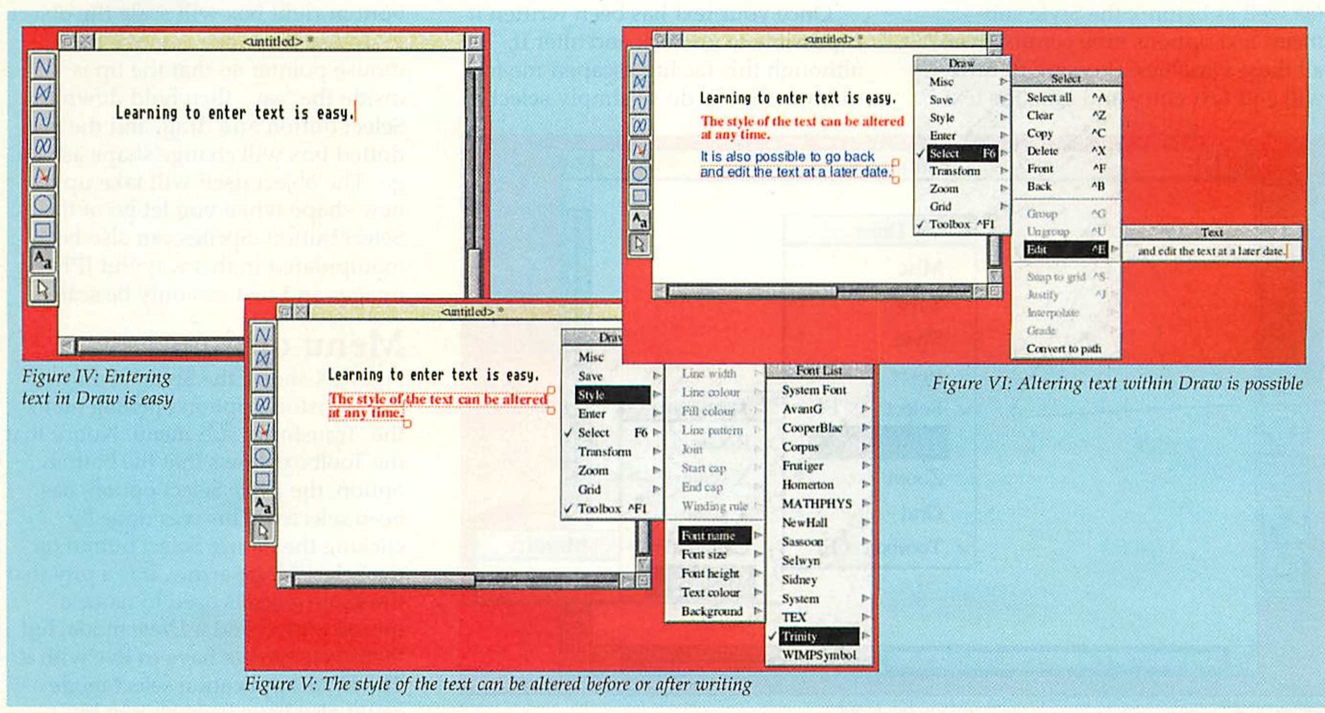


Figure IV: Entering text in Draw is easy

Figure V: The style of the text can be altered before or after writing

Figure VI: Altering text within Draw is possible

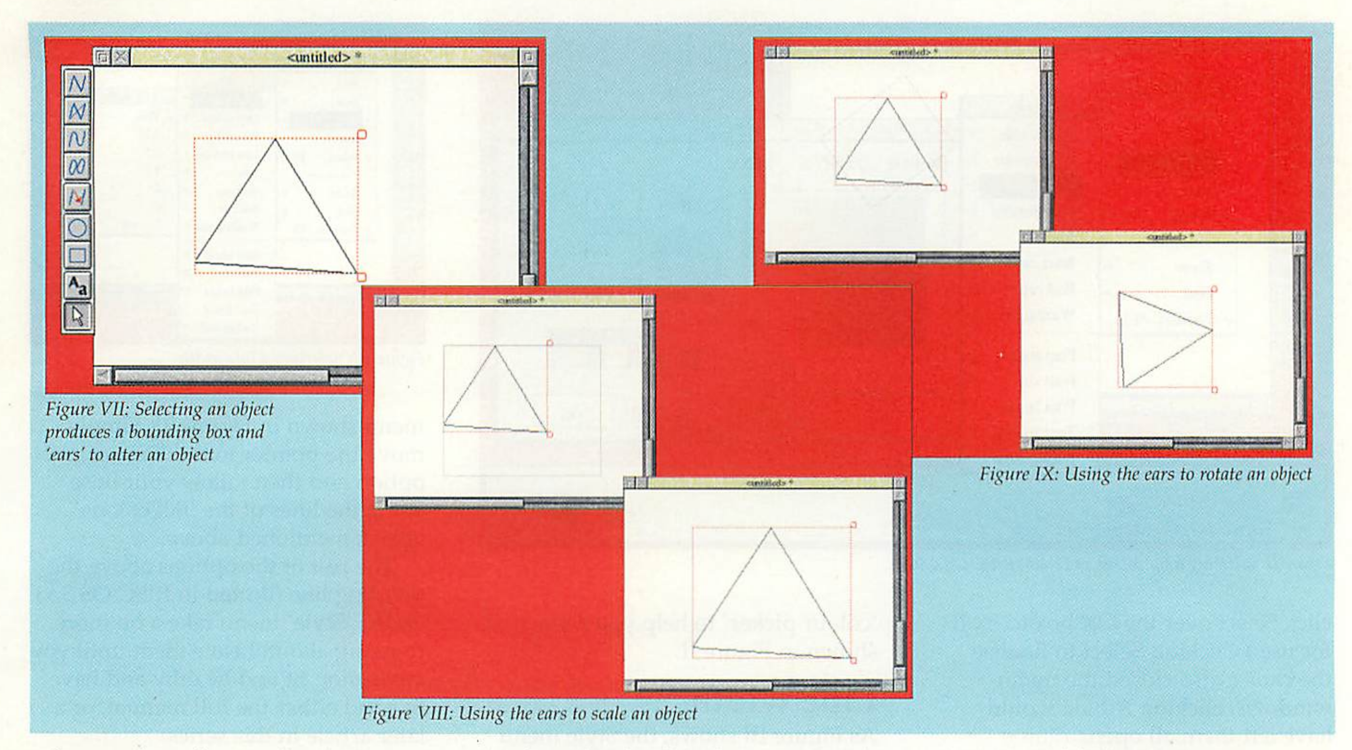


Figure VII: Selecting an object produces a bounding box and 'ears' to alter an object

Figure VIII: Using the ears to scale an object

Figure IX: Using the ears to rotate an object

colour, style and so on. Fascinating graphical effects are possible on RISC OS machines by using the 'Text to Path' options.

To type text into *Draw* select the Text entry option (see Figure IV). This can be done in either of two ways: using the Toolbox, or choosing the text option from the Enter menu. Next move the pointer to where you wish your text to be and click Select once. A red carat will show you where your text will be displayed when you type.

Don't worry if this is not in the right place, size, colour or typeface, as all these can be altered after the event (as well as before); the Style sub-menu text options give control over all these variables. Pressing Return will end text entry and glue the text in place, displayed in the current style as set by the menu options.

To change the settings it is important to tell the computer two things, first which bit of text you want to change and second how you want to change it. To choose the bit of text (or anything else) that you wish to alter you must use the Select option on the Toolbox. When that is highlighted you can click on your object (in this case the text) and a red dotted box will be drawn round it. Only then will the text options on the Style sub-menu be available. If they are greyed out it means that no text has been selected yet.

Once your text has been written it *is* possible to go back and alter it, although this facility escaped me for many years. To do so simply select the text, and follow the menus shown in Figure VI, you can then add, delete or alter your existing text and set the result by once again pressing Return. Simple.

The select box

Figure VII shows a simple triangle surrounded by a red dotted box with two smaller boxes on its top and bottom right corners. The box shows where the extreme outer points of the selected object are, being just big enough to enclose them. The top right small red box (or 'ear' as my students call it) is used for twisting or rotating an object while the bottom right box will scale the object.

To use these boxes move the mouse pointer so that the tip is inside the 'ear', then hold down the Select button and drag, and the big dotted box will change shape as you go. The object itself will take up its new shape when you let go of the Select button. Sprites can also be manipulated in this way but JPEG images and text can only be scaled.

Menu options

Figure X shows the Style menu with the Transform option opening on to the 'Transform' sub-menu. Notice that the Toolbox shows that the bottom option, the *Draw* Select option, has been selected. This was done by clicking the mouse Select button on the Select Mode arrow. It is a pity that the same word is used to name a mouse button and a *Draw* mode, but there you are, we have to live with it. The *Draw* application select mode could also have been chosen by

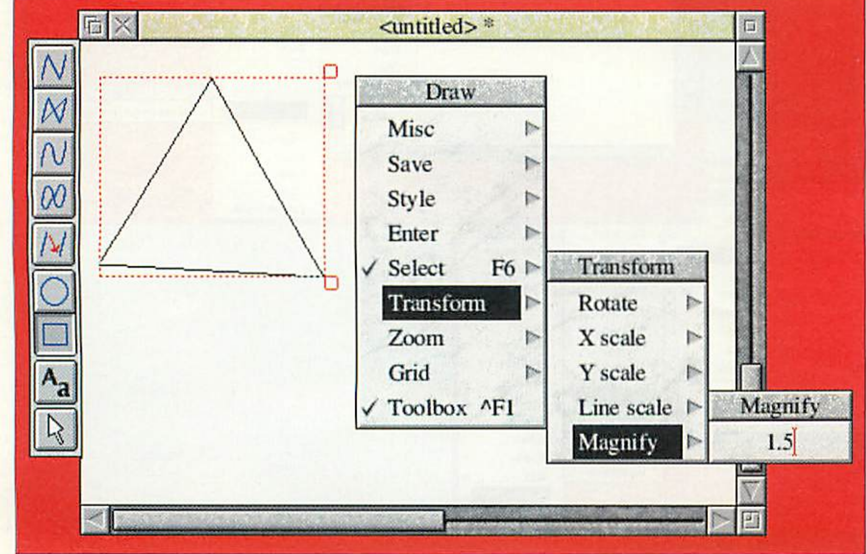


Figure X: Altering an object's size via the Transform sub-menu

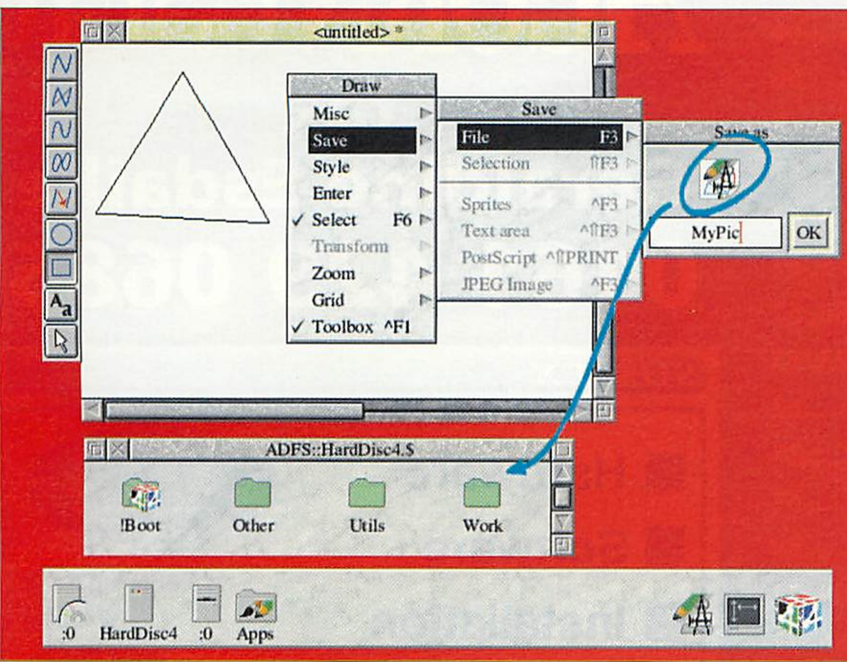


Figure XI: To save a file from Draw drag the 'Save as' icon to your Harddisc

clicking the mouse Select button on the Select option of the *Draw* menu.

This screen shot also shows the 'Magnify' option selected. This alters the real size of the drawing in absolute terms. For instance a setting of 0.8 will reduce the drawing, or a selected part of it, to 80% of the current size. To put it back the way it was a magnification of 125% or 1.25 is needed. In this instance a magnification value of 1.5 has been entered.

There are many keyboard short cuts, (that is, ways of getting things done by using the keys rather than the mouse), for example, a *Draw* object can be deleted by pressing Control + X together, (press Control first then tap X).

Undo

You will be able to reverse almost any action by pressing the F8 function key, with F9 restoring it. This is the Undo and Redo facility, which has a default memory of only 5k, but the manual, pages 73-75 (436 in the RISC OS 3.7 manual), shows how to make it bigger. As I write there appears to be a bug in the RISC OS 4 *Draw* undo facility.

Figure XII: By looking at the Path names we can understand where a file has been saved to

Saving your work

It's all very well doing something in *Draw* but now you need to know how to keep it. Saving work is the first stage of printing and is – or should be – always the last action before turning off the computer. The first stage in saving is to tell the computer where you are intending to save your work. There are several possibilities, ranging from the humble floppy disc, via the now essential harddisc right up to the top of the range re-writable CD-ROMs.

Saving will always follow the same basic pattern whatever the final destination of your work. The good people at Acorn – and now RISCOS Ltd – have done their best to ensure that saving is an almost identical procedure no matter what program you are using (as long as it runs 'within the Desktop environment' that is). The upshot of this is that once you know how to save work in one situation you can easily work out how to do it no matter what the circumstances may be. This is how…

First decide where you are going to save the work. The harddisc will do for this example. The relevant icon is the one in Figure XII with 'HardDisc4' under it. Referring to Figure XI (the left-hand end of a RISC OS 4 iconbar), the Apps icon is a 'Read Only' filing system so you can't save anything there. The RAM icon (not shown in this instance) is 'writable' but loses whatever you give it to save when the power is turned off, so be careful.

To choose a filing system simply click Select on its icon once and a filing system window will open (i.e. be displayed). It is this window into which you must drag the 'save icon' of the work you wish to save.

Next, prepare your file for saving (refer again to Figure XII). In *Draw*, choose the Save option from the Draw menu. Drag the drawfile icon (the picture above the box where you enter the desired file name) over to the destination filing window of your choice, then let go. (Note: RISC OS 4 users can now drag files directly to the drive icons on the iconbar to save, without having to open the Filer Window first.)

The lower part of Figure XIV shows the HardDisc4 filing window after the file has been saved. The title bar of the *Draw* window above it now shows the full 'Path name' of the saved file. A Path name tells the user and computer where a file can be found. In this instance *ADFS::HardDisc4.$.MyPic* tells us that the file *MyPic* can be found on HardDisc4, which is part of the ADFS filing system.

If you were to re-save the drawing, the *Draw* Save window would already have a full Path name in it ready for you to proceed, and this can also be seen in Figure XII.

So, by referring to Figures XI and XII we now know how to save a file, where to save it to, and what the Path names signify. Next month I'll show you how I produced the WOW! picture and how to print out your creations.

END

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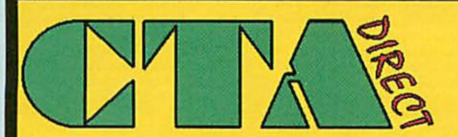


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The David Pilling Web site contains all manner of RISC OS goodies for those new and not so new in the RISC OS market. Not forgetting full information on the award-winning *Ovation Pro* dtp package. Come see us now!

Drobe Launch Pad

Web: http://www.drobe.co.uk/

Drobe Launch Pad is a new Internet Portal which combines links, news and information into one easy to use site.

Drobe RISC Software's Web Development Team have spent over 4 months creating the site to ensure that it gives the maximum functionality possible to all RISC OS users, including up to date news feeds usually only found on the larger, main stream portals. Features include a POP e-mail checker without banner adverts, a search engine incorporating AcornSearch.com and over 20 other popular engines, up to date news feeds and links to the majority of the industry's Web sites. More features including personalisation are due to be launched in the next few weeks.

Acorn Arcade

Web: http://www.acornarcade.com/

Acorn Arcade is the leading Web site for information on current RISC OS games developments. Offering news, reviews, features and downloads it's so good we're sure you'll come back.

Cybervillage

Web: http://acorn.cybervillage.co.uk/

Your one stop shop for Acorn information. The Hotnet section, updated regularly, keeps you up to speed on all developments concerned with RISC OS and associated/affiliated information.

Torty

Web: http://www.torty.org.uk

This site has the obligatory family snaps page, the almost obligatory CV and the much more generally interesting RISC OS Shareware area. *ECSUtils* is upgraded here with twenty or so smaller apps for free, doing everything from telling the time to taking pictures.

Free Ads

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- DX4/100 PC Card Dos 7 All manuals £80.00. Pipedream 4.5/2 manuals £26.00. Textease 4.0 manuals £27.00. All include postage. Tel: 01706 817570, 3 The Glen, Todmorden, Lancs.
- Art Works Clip Art 1&2 £25, Image Outliner £20, 1st Word+ and Genesis Plus £20, Uniqueway Risc Disc CD's 1-3 £25, Tel: Christian 01285 659872.
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- For Sale: Acorn Risc PC600 computer (complete), AKF 60 Monitor, 420 HD, 48Mb DRAM, 2Mb VRAM, CD Rom, manuals, CD's etc (magazine), loaded with software, excellent condition, £400 or nearest offer please. E-mail: keith@bronteland.freeserve.co.uk tel: 01535 643419 (Yorks) I will send if required.
- Bargain Software: Webmaster £45, Impression Publisher £50, Genesis Plus £10, All £100. Tel: 01765 689913 Ripon (North Yorks).
- A4000, 14" multiscan monitor, H.P. Deskjet 520 Printer, manuals and software including Impression Style and Techsoft £250 01294 822303.
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The bigger picture

Mike Battersby gives a few tips on choosing a digital projector

In the last few years digital projectors have become established as the main means of providing large images from computer output for display to an audience.

With specs improving all the time and prices falling they are becoming accessible to a wide range of users including schools, though you can still expect to pay at least £2,000 (excluding VAT) for one capable of being viewed by a reasonable number of people without the need for blackout.

In fact the market has seen such a proliferation of different projectors with a whole range of different features and specifications, that choosing one can be quite a headache.

This article looks at various aspects of digital projectors in the hope of helping those who want one to sort through the variety available. Apart from all the other considerations associated with digital projectors there is always the question of whether they will work with your Acorn and if so, how well.

By way of example, then, this article also reviews the Mitsubishi S120 digital projector which I have tested with PCs and Acorns. Inevitably, if you look through catalogues you will see references to PCs and Macs but none whatsoever to Acorns. That doesn't mean they won't work with Acorns at all, but does mean that some facilities work while others don't.

Image quality

Image quality will generally depend on 3 main factors:

- The brightness of the lamp: this is usually rated in ANSI lumens but for some inexplicable reason some projectors perform as well as others with a higher rating. As a rule of thumb however, the higher the rating, the more powerful the projector and the more suitable therefore for larger rooms and audiences. I have found that a rating of 650 ANSI lumens is the minimum requirement for classroom use without blackout. The Mitsubishi S120 is rated at 900 ANSI lumens and should therefore be adequate for classroom or small hall use without blackout, though be aware that direct sunlight on the screen will always diminish the clarity of an image.
- The internal screen type: generally good projectors use TFT screen technology though some may use DSTN. TFT is vastly superior, in my opinion, and I would barely consider the alternative. However, you may find a projector at a bargain price which, on testing, proves perfectly adequate for your purpose, such as for display to a relatively small audience. Even within these technologies, however, different manufacturers produce different quality screens. The Mitsubishi S120 produces one of the best images I've seen from projectors in its price range.
- Screen resolution: this works in much the same way as for a monitor and the range of pixel densities will likely parallel that of monitor screens, typically VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024) and so on.

I personally would recommend capability of at least 800x600 if you can afford it. Above that all things like the individual icons start to get reduced in size to an extent that seems to me to partially defeat the object of having a large display image. However, again it is a matter of what you want to display, the size of audience and so forth.

The Mitsubishi S120 has a resolution of 800x600

Lamp life

The lamp life of most projectors is rated at 2,000 hours. The exception is the Philips range which uses bulbs with a 4,000 hours rating. The longer rating does not mean better quality projection just a longer interval before you have to pay around £300-£400 for a replacement bulb.

Again, unfortunately, all is not as simple as it might be as some lamps do not have full brightness for their whole life span. You may find that some bulbs have full brightness for, say, half their life span then a reduction for the next portion, then a further reduction and so on.

This is well worth checking out as it could substantially affect the suitability of a projector for a particular use if the bulb does not maintain its initial brightness. The Mitsubishi S120's lamp does, I believe, maintain full brightness for its entire life.



pixels. Like many other projectors, however, it can display an XGA image using 'compression' which means it reduces it to an 800x600 simulation at the expense of detail.

Extra features

Various models incorporate different additional facilities which typically could include:

- Power zoom and focus: where zoom and focus can be altered by remote control. Whether this is worth the extra cost involved is likely to be a matter of preference as it can be more difficult to precisely adjust these than if done manually. Once zoom and focus have been adjusted for projection onto a particular screen it is unlikely that it would be necessary to adjust it.

- Variety of inputs: in addition to the usual RGB input it may be useful to have an SVHS or video input to enable projection of, for instance, videos. Video input facilitates the connection of a small video camera to enable the projector to double as an OHP (overhead projector) for display of printed matter or solid objects. There may also be sound input with amplification to a speaker. Sound amplification allows video sound output or spoken sound amplification via a microphone. Some mini video cameras incorporate microphones for this purpose.

- Monitor re-driver: it is useful to have the ability to take the monitor signal out from the projector to connect to a monitor. This allows simultaneous display via both the projector and a monitor without the need for a splitter cable.

- Remote control of the mouse: it may be possible to use the projector remote control to move the pointer on the screen and emulate mouse clicks via a lead to the mouse port on the computer. This can be convenient in that it allows a speaker to demonstrate actions that take place when something is clicked on without being restricted to the range of a mouse lead.

- Image correction: this can compensate for projection at an angle to the screen to eliminate distortion of the image.

The Mitsubishi S120 projector has manual zoom and focus, RGB, SVHS, video and various audio inputs and a monitor re-driver output.

It has an RS-232 input for connecting to a mouse port and provides a lead for doing so as well as leads to connect from the computer to the projector. It has a remote control for turning on and off, adjusting settings and emulating the mouse.

Using the S120

The projector produces a high quality image from RISC OS computers provided they have a 15 pin monitor output. This includes all models from the A3020 onwards (A4000, A5000, A7000 and Risc PC). However, earlier models such as the A300s, A400s and A3000 only have the 9 pin monitor outputs.

There are adapters which monitors with 15 pin connectors (such as the AKF50) to be connected to the older models but the ones I tried did not enable a correct picture to be displayed. Although some parts of the screen displayed, the colours were incorrect and the images unclear.

Oddly, though, the image output from the re-driver displayed correctly on an external monitor. Therefore the projector is really only suitable for Acorns with 15 pin connectors unless a technical expert can come up with a more suitable form of adapter.

The connector to a computer mouse socket is of the PS2 type so will not connect to any Acorn other than the A7000 series, although both Microdigital's Mico and RiscStation's latest machines also take PS2 mice.

With the A7000 the remote control works fine, it moves the pointer and emulates mouse clicks from the left and right mouse buttons but unfortunately can't emulate the middle mouse button. This wouldn't be so bad, except that the connector from the projector occupies the mouse port on the A7000 so you can't use a mouse in combination with it.

Therefore the usefulness of the remote control as a mouse depends very much on what you want to be able to demonstrate. The use of a software utility to emulate the mouse via the keyboard might be one way to combine the use of the remote control and still have Menu button emulation.

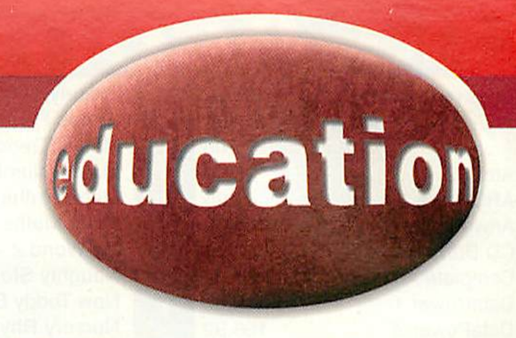
Conclusion

There are a wide range of digital projectors around to suit a variety of needs and pockets. The Mitsubishi S120 is a very high quality projector within its price bracket (typically £2,500-£3,000 excluding VAT – educational price, depending on where you buy it). It produces a high quality image from Acorns but is probably only suitable for straightforward display in the majority of cases, though there is some potential value in the remote control mouse facility. END



Product details

Product:	Mitsubishi S120 digital projector
Price:	Around £3995
Supplier:	Medium UK, Medium House, Unit 4, Peter James Business Centre, Pump Lane, Hayes, Middlesex UB3 3NT
Tel:	0181 813 5777



Little fingers, big access

SEMERC (0161 827 2927) have three new keyboards to tempt you with. The *TrackBoard* is a space saving compact keyboard with a built-in trackball and configurable colour-coded keys. Its drag-mode and double-click keys ensure that those with restricted movement have the full access.

Next is the *Little Big Board* which also comes with configurable colour-coded keys but this time with a 22-key calculator-style numeric key pad and an enlarged enter key. This keyboard is 30 per cent smaller than a standard qwerty keyboard for those with limited desk space or who want to access their computer from a wheelchair. The third option is *Little Fingers* which has been designed for those with weak wrists with its built-in full-size wrist rest and trackball. Prices start from £49.

Parent Internet pack

Last year NCH Action for Children produced a handbook for children and parents highlighting the potential hazards to be found on the Internet.

The DfEE have now produced their own guide called Superhighway Safety which incorporates NCH's NetSmart tips and which emphasises the potential of the Internet, whether used at home or school. With a foreword by David Blunkett, this pack will be sent to schools before Christmas.

John Carr, Internet Consultant for NCH Action for Children commented: "School children are the fastest growing groups of new Internet users in the UK.

"This is mainly due to the excellent policies pursued by the Government in our schools. But obviously we need to be cautious, and questions of safety should be paramount at all times."

When shall we three meet again...

Computer Kids (0151 638 1296) have launched Macbeth CD which fits neatly with both primary and secondary literacy requirements while providing quality digital content for incorporating ICT in English.

For £25 there is an A5 booklet, a tri-fold play review, Shakespearian newspaper, comic strip murder scene, cut-and-paste storyline, witches' spells and a deadly debate – among others.

This is the fourth in Computer Kids' *ICT Across the Curriculum* series, the earlier titles being: Word Processing Tasks and Templates, Pictorial Databases, and Spreadsheets through Time.

Each CD comes with teacher's notes and National Curriculum and QCA exemplar scheme of word for IT cross-referencing.

Contacting AU

Pam Turnbull:
educ@acornuser.com

Historical sources and resources

The Public Record Office is now online. Teachers, parents, students and pupils can now access mountains of historical resources via their *Learning Curve* Web site (http://learningcurve.pro.gov.uk). This features material from the Domesday Book and Magna Carta to a huge collection of political cartoons, posters and photographs.

Information is stored in *galleries* where some events are accompanied by video footage, such as the suicide of Suffragette Emily Davison.

Commenting on the launch, the PRO's Head of Education, Ysanne Stiell-McNeill said: "The content for the site has been created by historical experts in partnerships with practising teachers and education professionals to produce a resource full of in-depth and highly accurate information, all of which is presented with the history curriculum firmly in mind."

In brief

My world bonanza

Inclusive Technology (01457 819 799) have three collections of My World resources on offer. Collection 1 concentrates on early language and literacy resources. Collection 2 covers shape, sorting and thinking with 3D Shapes, Animal Sorting, Pattern Maker, Attributes, Blocks and Codes. Not to be outdone Collection 3 looks at reading and recording with six different programs.

Each collection costs £75, or you could buy all three collections for £225 which comes with a free *My World 2+2*.

Online book access

Oxford University Press have added an online store for primary teachers to their Web site. With over 2000 books and educational resources for maths and literacy to choose from you can now browse and buy at your leisure. There is also the Oxford Literacy Web, a new stand-alone literacy scheme for reluctant readers. Why not take a look for yourself at: www.oup.co.uk/primary

TEEM reviews

Teachers Evaluating Education Multimedia (TEEM for short) is an Internet project initiated by Sparrowhawk & Heald in conjunction with CreICT at Homerton College, Cambridge. Now in its second year, the DfEE has given its support to the project for the next three years.

Each program is evaluated by two practising classroom teachers, once as a piece of curriculum software and then as a case study. You can read what they have to say on www.TEEM.org.uk

Oops

The wrong details for Medieval and Tudor Hampshire were printed in the November issue of *Acorn User*. Our apologies and here is the correct information:

Product:	Medieval and Tudor Hampshire
Price:	£20
Ages:	7-11
Supplier:	Hampshire Record Office
Tel:	01962 846154
Web:	www.hants.gov.uk/record-office/index.html/



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† Separate RPC version

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Revision 20



English as she is spoke

Pam Turnbull looks at a very specific reference source

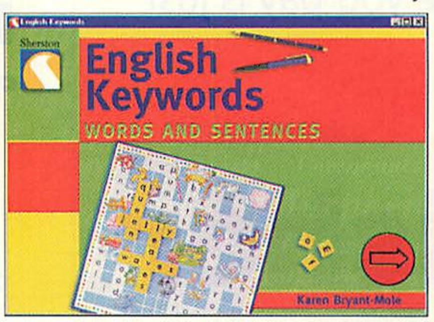
W*ords and Sentences* is the second in Sherston's *Keywords* series, this one concentrates on English. A useful tool for teachers (and pupils), it looks at the language associated with grammar, punctuation and phonics. And by the mention on those three words alone, you know that this is tied to the Literacy Hour.

Based on the book version (also written by Karen Bryant-Mole) it is a very simple encyclopedia/dictionary. The box contains a poster of the program icons, which are pretty self-explanatory (and identical to Science Keywords), but this is a useful idea as are the Quick Start and Index of Keywords sheets.

The manual duplicates these but contains sound step-by step advice. There are 136 entries from *abstract noun* to *word*, stopping along the way at *complex sentence* and *mnemonic*.

The main screen offers you three ways to access the information, via an alphabetical listing, picture index or through the simple search tool. If you know the word for which you want the definition, the index is your best port of call. Scroll through the entries or click on the relevant letter to go the beginning of that section of the list. Make your choice and you'll find yourself on a screen with a definition with some examples.

Click on the ear/speaker icon to hear the text read to you or opt for the chain icon to see any linked articles. These will then change colour and be underlined, you cannot access the links unless you click the link button which seems a waste of time. You many not want all your children to link to other parts of the program, but my preferred option would be to disable this facility from a customisation screen – which you can't, but this is a minor niggle.



Sometimes a third, camera, icon will appear which informs you that your chosen entry has an illustration (or choice of images) with it. Click to go to the thumbnail images. Make your choice and the full-sized picture will appear with a caption icon next to it. Click here to reveal information on the picture and the grammatical or phonic information it is describing.

Along the top of the screen are icons which will let you return to the previous screen; go to the main menu; give you information about using the program; let you print, export the text or graphics to another program; or quit.

If you're looking for something and you don't know exactly what, the Word Search choice from the main menu is best. You can choose one or two words with an add/or modifier; click Find when you're ready, but do watch the spelling. A box will then appear with appropriate matches and clicking on these will take you to that specific entry.

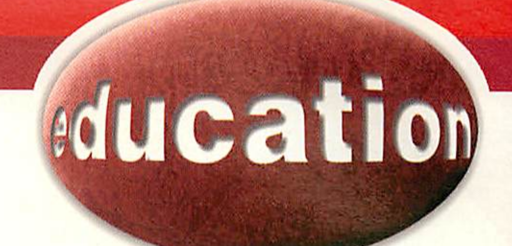
Finally there is the Picture Index option which reveals all the words that have pictures connected to them. And that is all there is to it.

Simple and effective it contains all the words and phrases children are required to know by the National Literacy Strategy and in such a way that they can make their own word/definitions books or use it as an electronic dictionary. And as most dictionaries for this age group do not cover the grammatical terms required this is a definite boon.

END

Product details

Product:	English Keywords – Word and Sentences
Price:	£29.95
Ages:	7-11 year olds
Supplier:	Sherston Software, Angel House, Malmesbury, Wiltshire SN16 0LH
Tel:	(+44/0) 1666 843224
Fax:	(+44/0) 1666 843216
E-mail:	sales@sherston.co.uk
Web:	www.sherston.com



Web zone

You pays your money and... Pam Turnbull looks into the subscription side of Argosphere

If you don't know about ArgoSphere, here's a rundown: this is a UK-based education site for children, parents and teachers which you can access at three levels: a selection of free activities from the full site; Volume 1 which contains most of the activities from the full site but without new activities or developments; and the Full Site.

Edited by Simon Hosler, the Full Site includes an extensive and expanding range of activities and resources. There are two subscription services to the Full ArgoSphere site - one for schools and the other for homes. Both provide complete access to a wide range of age-specific interactive resources and activities for children aged 3+, 5+, 8+ or 13+.

For teachers

As this is not just a site for teachers, you don't get the huge amount of classroom resources available on some sites, but what is there is useful rather than gimmicky. In addition if you're a parent there are things to keep the kids gainfully employed at home too. Activities are varied, nice to look out and well differentiated with items ranging from *The Sea Stealers* and *Looking at Maps*, to *Nursery Rhymes* and *Bo Bear*.

Specific RISC OS support

With an Acorn pedigree behind it Argosphere does acknowledge that not everyone in the world is using a PC. Activities are JavaScript-based but if you don't have it attached to your browser there is a section of non-JavaScript activities and resources. Even so there are some activities which Acorn users will have problems with. In particular, my younger testers were disappointed that some of the interactive activities refused to work on our Risc PC. However, there is a RISC OS-specific download bureau which is as rare as it is refreshing.

This allows you to download most (but not all) of the ArgoSphere activities to be used offline. Beneficial for keeping modem or telephone use to a minimum, and also for quick loading of pages - you're not waiting forever for graphics - but also helpful for schools not on a network as individual activities can be copied to floppy and used throughout the school.

I was, however, disappointed by the quantity and dates of the programs on offer, with about three months elapsing since the latest upload. But, in addition to offline activities, there are printable maths worksheets (from Creative Curriculum Software, you set the number, operation and range), crosswords (covering a range of topics from the Old Testament to capital cities), even a handwriting page maker and Web-based worksheets for hectic classroom teachers and a range of clip-art and fonts to access.

I was impressed by the quality of these resources. For instance, the Handwriting Page Maker can be used online or downloaded and lets you create pages of text based on Christopher Jarman's Jardotty font. Decide on the letters and words and by joining the dots children can copy the characters with arrows giving starting place and direction.

Then there's TestMaker which requires JavaScript support. Easy to use, it lets you make quizzes which can be used on or offline. You can opt to choose a correct answer from a list or type in the right answer. Then press a button to find out your score and which questions you got right.

I would have liked connections with particularly good education sites, but links are limited to OFSTED, plus a few schools and commercial publishers. However, I did like the links to www.teaching-today.com which gives a scrolling lists of education stories for you to access. The site is still being developed and a lot of thought has gone into the look, though a more obvious front door would be a good idea. END

Product details

Product: ArgoSphere
Web: www.argosphere.net

Bash a mole

Mike Cook gets cruel to cute animals

Well here we are at Christmas, it only seems like two minutes ago it was September (little contributors' joke about deadlines). So as this is the season of joy and merriment I thought I would make a game. This one is based on those seaside arcade games where moles peep out of the ground and you have to bash them with a hammer.

However, in order to simplify matters somewhat and to appease the anti-animal cruelty lobby we will not be bashing actual moles, nor animatronic versions thereof, but lights. To be even more accurate we will be bashing switches with lights nearby, but we shall have virtual moles appearing on the desktop just to retain the flavour of things.

So let's see what we need our computer to control – basically a few LEDs and switches so this sounds like a job for one of those many input/output expansion multiplexer projects I have made over the years. However, in this case that is overkill with the electronics and I have come up with something much simpler. The problem I set myself was to control sixteen LEDs and to be able to read sixteen switches all from the printer port without any external power supply. But, with only eight data outputs from the printer port, how is this done?

If you read last month's article you will remember that I had one output controlling one LED, this meant any LED could be on or off. Now in this game we only want one LED to be on at any one time, it's the one we are going to bash, so we can make the outputs go further.

Look at Figure Ia, here we have an LED connected to two outputs. The LED only lights up when D0 is at a logic one (high), and D4 is at a logic zero (low). Now, we have used two output lines to light one LED, not very efficient is it? Next, in Figure Ib, two LEDs are connected to D0 and I can turn either of them on by putting a logic zero on D4 or D5.

Note here if I put a logic zero on both outputs both LEDs will light but because the current is being shared from the common resistor they will not be as bright, generally I only want one light on at a time. Here you see we have two LEDs being controlled by three outputs, still not very efficient but better than Figure Ia. Finally look at Figure Ic, this is a simple extension of the previous idea but now we have four outputs controlling four LEDs, we have finally reached the efficiency of a single output for a single LED.

However, see how this efficiency is rising faster than a simple linear relationship, as we add another output line the number of LEDs increases by more than one, four outputs being the break-even point. In fact the rule is that the number of LEDs we can light is half the number of outputs squared. With eight outputs we can control sixteen LEDs which is shown in Figure II, this sort of arrangement is known as a matrix because the LEDs can be addressed by column and row. In this case to light any LED one row output (D0 to D3) has to be high and one column output has to be low. Note that the other row outputs need to be low and the other column outputs need to be high to ensure that just one light is lit.

Figure I: Developing an LED matrix

Splat a rat

That's the outputs dealt with so what about the inputs? Again we can take advantage of the fact that we only want to detect a switch closing when it is associated with a lit LED and so I can read all sixteen switches by using only four of the status inputs on the printer port. Again in Figure II you will see each row connected to an input. When the row outputs are logic zero you will see zero on all the inputs but when a row goes high, to light an LED the corresponding input will also go high.

Now the clever part is that when the switch across the lit LED is closed the LED is shorted out and so goes off, and the corresponding status input goes low. Therefore, as the

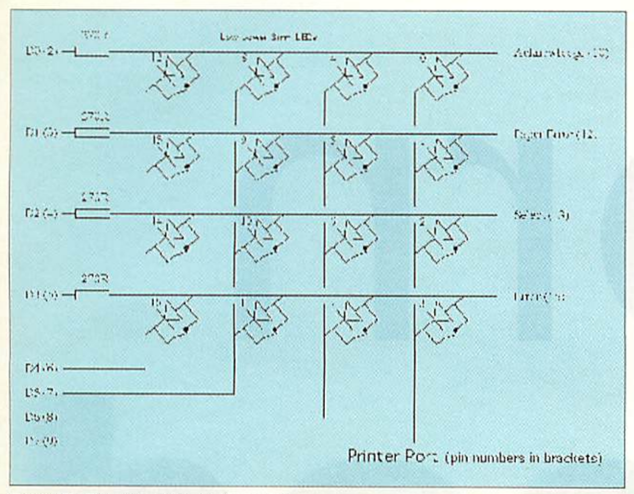


Figure II: The circuit for Bash a Mole

computer knows what row output it raised and what column output it lowered it can work out if the switch is pressed or not, which is all very efficient. The only slight snag is that if you press a switch that hasn't got a lit light associated with it you could light up a different light, in the context of what we want this isn't important.

The way this circuit is wired up makes things easy for the software, to light an LED you must output a bit pattern that has the lower four bits (least significant nibble) set to 1, 2, 4, or 8 and the upper four bits (most significant nibble) 7, B, E, or D. Note these are hexadecimal bit values. Now, if we label or number the least significant nibble patterns 0 to 3 and take the status register and shift it to the left by the least significant nibble pattern's number, we get the bit we are interested in always in the same place, that's bit 6.

That may sound complex but it means we can write a very simple routine for lighting the LEDs and reading the switch. What we need to do is to generate a look-up table, or array variable, with an entry, or value, for each LED. If we do that in the right order the two least significant bits of the look-up table index is also the status register shift to the left value. Then bit 6 in the status register will be a zero if the switch is pressed otherwise it will be a logic one. If you can't follow that then look at the program *matrix1*.

Now you have to physically make Figure II. The first thing to decide is what sort of mallet you are going to use. For the feel of the game a heavy one is best, this is because it is not so manoeuvrable as a light one but it does put extra demands on the ruggedness of your construction. Whatever you choose you will need to put some padding on it, I stuck some thick neoprene rubber over the end that came from a dead mouse mat. Switches can be a problem, the cheapest solution would be to use two domed screws and a conducting mallet. I toyed with the idea of putting foil or copper over the head to make a contact, but I couldn't see how it would last in the long term.

You can get push button switches but the amount of movement on these is limited and so any hammer blow would direct it's force straight on the contacts. In the end I settled for keyboard switches as these had a long travel distance with the 'make' connection condition occurring early in the travel. This meant I could arrange a screw to take most of the force as shown in Figure III, note you need to drill two sizes of hole one from the front and the other from the back.

Nuts to you

I stuck the nut on with super glue and glued the switch on the back with liberal dollops of hot melt glue. The board itself was a piece of thick fibre board but for even more rugged results you could use a piece of kitchen work surface. The LEDs should be mounted in a hole so that they are just recessed slightly, this prevents the mallet from getting to them. Again hot melt glue should secure them in place.

The important thing is to make sure that the LEDs are in the right place on the board to correspond with the software. As you look at the front of the board the LED numbers start at the top right hand corner and go from left to right. Remember when you are wiring them up you will be working from the back of the board. If you do get it wrong you could always shuffle the icons about in the application using the template editor, however you are best using the *matrix1* program to make sure it is right as you make it.

Now we can light the LEDs and read the switches it's time to put it all together into a game. Looking through some old issues of *Acorn User* I came across software versions of the same idea. I was inspired by this – oh all right I nicked the sound from William Curson and the graphics from Philip Mellor, but the main code is mine basically because they use a 3 by 3 grid of moles and I use a 4 by 4 array. Also I added an extra image of the mole just starting to appear from its mound. The idea is that just before the light comes on you get a little pre-warning on the monitor of where it is going to come from so your eyes constantly dart between the screen and the board.

With a bit of practice you could even become proficient at touch mole-bashing. The rules are simple, keep on bashing until ten moles escape – you can change this easily in the code. Also you can change the minimum time a mole appears for along with the maximum time. This requires hacking into the code but the variables are placed just before the main loop and all have sensible names. One place you might want to improve the application is to have menu options to control the times. This would make a great game for Christmas fairs or parties as long as you steer clear of the league against cruel sports – one option is to replace the mole with Bill Gates.

The Bash-a-Mole game was demonstrated at the RISC OS '99 show – and was very popular. **END**

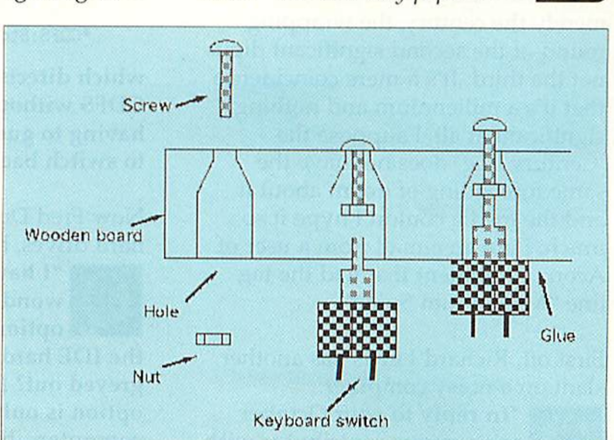


Figure III: Fixing the switches

Rambles through Acorn Wood



Mike Cook grumbles through the trees

Reading through the November issue I was struck by the Regan Files and was rather puzzled. If those two Icon Technology types are such nice guys why has Mike Glover super-glued Bob Pollard's wrist to a tree?

Another thing from that issue was the news that people are being asked to pay up for using the LZW compression algorithm. Now in the US you can get a patent on an algorithm but UK law specifically forbids this. Therefore I would think that any such patent couldn't be enforced over here, I would be interested in the views of any legally trained reader.

As this is the final issue before the Millennium bug is supposed to strike it occurs to me that it's named incorrectly. The problem has nothing to do with the millennium but merely the century, the wrapping round of the second significant digit not the third. It's a mere coincidence that it's a millennium and nothing significant at all. I suppose the 'Century Bug' does not have the same foreboding of doom about it and the media couldn't hype it so much. I got an e-mail from a user of Acorn equipment that had the tag line "Millennium Smug".

First off, Richard Lewis has another slant on a noisy computer:



"In reply to your October anonymous contributor with the noisy CD-ROM, I too have the very same problem since installing a secondhand 8x drive I bought at a show. Your tip of using:

```
*CDFS
*Stop
*ADFS
```

has been a great help, thanks. Unfortunately it assumes that your current filing system is ADFS and so switches back to it after issuing the Stop command. If, however, you've been using a different filing system, for instance IDEFS, SCSI or something, then you will need a modified script such as:

```
*CDFS:Stop
```

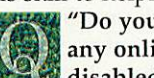
which directs the command Stop to CDFS without switching to it and having to guess which file system to switch back to afterwards."

Now Fred Dulwich is musing about hard drives, he writes:



"I have been wondering...why is the option 'Spin down delay' in the IDE harddisc configure window greyed out? I have heard that this option is only suitable for portable computers, but I can't see any reason why it shouldn't apply to desktops as well.

"I only ask because we tend to leave our computer on for long-ish periods, and if the harddisc could spin down, would it last longer? If, in theory, there is no problem with this idea, could the SWI ADFS_PowerControl be used safely to set the auto spindown to, say, 15 minutes?"



My thinking on this is that it doesn't much matter to the lifetime of the disc as the extra stress on spin down and spin up roughly matches the saving of wear over leaving it running. On portables this is done purely as a power-saving measure where it is worthwhile. Does anyone else have any views on this matter?

Now Alex Farlie is wanting to put his skill to helping others, he writes:

"Do you know if there is any online material on disabled access to IT or the Internet, or designing software for them? I am considering whether to develop a symbol-based e-mail program for the severely disabled or literacy impaired and information resources would be appreciated. The actual legwork of deciding what's relevant as well as the creative effort is my problem however."



I don't know of anything off hand but I would imagine that your project would be most useful if you targeted your



application on a disabled individual. I imagine that disabilities are fairly individual and if there was a blanket solution it would have appeared by now. Try contacting your local Social Services department of Students Union and see if they can put you in touch with someone who needs help.

I remember about 15 years ago I had a severely disabled student at the University. He was studying maths and had very poor motor control such that he couldn't speak, feed himself, write or even sit still in his wheel chair without being strapped in. However, he was quick-witted and had a great sense of humour. I made some specially modified keyboards so that he could learn machine code programming and use the mainframes, but I have not found a use for that equipment since.

Matthew Sackman is really in need of a copy of the Programmers Reference manual, he writes:



"I am writing a backup utility, and although I have never released it or distributed it, it is up to version 1.5. One of the new features that I am trying to include in this version is the ability to compress the backed up files using the *Squash* module. In a *StrongHelp* manual on SWIs, I found that there appear to be two SWIs, Squash_Compress and Squash_Decompress. Unfortunately the manual provided no information on the parameters, and various attempts of my own to work out the parameters needed have failed.

"Somewhat unsurprisingly, my RISC OS 2 PRMs do not mention the *Squash* program or module at all. Could you enlighten me as to how to use these SWIs, and also how to look for this module and load it if found from within the program which I am writing in BASIC. Also, to ease the problem of looking around for the module, am I allowed to distribute the *Squash* module inside the program directory?"



As the module is part of the operating system there is no need to distribute it with your application. However to be on the safe side use an RMensure command in your Run file. I am not surprised you couldn't work out the parameters, it is rather complex with lots of bits being used as flags and you really have to call this twice, the first time to get the size of buffers you need and the second time to actually do the job. It's four pages of densely packed information in the Programmers Reference Manual, but just for you, and everyone else really, I have included the information on the AU Web site in a plain text file.

David Coulthard is trying to put his computer on television:



"I am trying to use my computer to put effects and titles onto my home video recordings. I have an upgraded 410/1 with 40Mb hard drive with RISC OS 3.1 and ARM3.

"The main thing I'm trying to do is produce a realistic scrolling credit effect at the end of a film. I've looked at other people's programs but they are all either too fancy or I get lost trying to dissect the part I require. I think the system font would be adequate for my needs as I imagine using a fancy font may be complicated. As you might have guessed I am a program short of being a programmer, but at least I'm keen!

"Other effects I would like are gradual appearance of a title and the opposite, and various screen fades in both directions (so, appearing and disappearing). Correct me if I'm wrong but there isn't a simple commercial program to do these things. For simple read cheap. The other side of all this is the output to a VCR and I believe Pineapple Software sell TV PAL decoders. As I still have my BBC B computer perhaps I could use this in some way. Either run the programs on it or use it's ability to use a TV as a monitor."

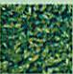


While there are commercial programs to do this I don't know of any cheap ones, however I am sure some readers will know of some. On the hardware side you need the Pineapple PAL coders, not the decoders. The two models they sell are priced £160 and £260 and have different features so you are best talking directly to them to see which matches your needs.

You can use your model B as this has a composite video output, but you will need to modify it in order to get composite colour out of it. This involves soldering an extra capacitor in the circuit – the full details are in one of Acorn's application notes that are on past cover CDs. As to fading effects this is a little more tricky. First of all if you want a picture behind your titles, as opposed to whatever background the computer puts out, you will need a video mixer along with something called a genlock.

This gizmo will synchronise your computer to the incoming video signal and allow the two to be mixed. Then fades can be carried out by the mixer either manually or under the control of the computer. However, a genlock and mixer are not cheap but some mixers also include the PAL encoding function. When you add up the investment in hardware that is needed the cost of commercial titling software is quite insignificant. END

After my grumbles through Acorn Wood recently P.C. Robinson thought he would join in:



"I thought I would add my own grumbles regarding *Help* files and *Info* templates. One of my biggest grumbles is missing *Help* files within applications and the fact that many of them give no indication as to the version number of the software. Why should anyone have to load an application just to find out what version number it is. We should all be able to use the Filer's file menu to obtain this information.

"Even worse is when the *Help* file expects a certain application to be available to even read it using this method. Saying that my exception would be Internet-related software and help being in HTML format.

"Which brings me on to an application's *Info* template. I wish more authors would include a Web button with a link to their Web site, for updates and such. How many times have users forgotten the Web address of the author especially for PD and Shareware, although commercial houses could also gain."

Contacting AU

Mike Cook:
rambles@acornuser.com



A fish called RISC OS

One can only offer praise to all involved in the continued development of both software and hardware for RISC OS after the inevitable demise of Acorn. However to ensure success where Acorn failed one cannot become complacent and believe the name 'RISC OS' is enough to sell itself.

The RISC OS platform is *very* small fish when compared to Windows, or even the Apple Mac. If we are to survive it must be shown that not only is RISC OS an excellent platform but, most importantly, that present and future users are not tied down with outdated equipment and attitudes.

To survive we should be able to handle different platforms, but with PC cards we are stuck at 133MHz and getting hold of recent versions of Linux requires Internet access – which not everybody has – and even if they do, are they willing to spend so much time and money downloading huge files that may not even work?

As much as many of the RISC OS fraternity cringe at the thought of promoting 'alien' operating systems, we ignore them at our peril. After all *Acorn User* ran a regular PC column, so why not have a Linux column?

I currently run Linux on my Risc PC, not because I have lost faith in RISC OS but because my educational studies dictate compatibility. But ARMLinux is so out of date I have had to resort to a 'mix and match' policy to make it even vaguely resemble the versions of Linux available on the PC. I do, however, go back to RISC OS whenever I have the opportunity.

Finally I'd like to thank Messrs Price and Ruck at The ARM Club and Mr Hughes of WACG for helping me get Linux running.

Douglas Blastland
York

Viewpoint

For some reason *Acorn User* occasionally gets accused of giving readers a false impression of what's going on in the market – perhaps even of having rose-tinted glasses when it comes to what's happening in the RISC OS world.

Naturally enough I don't agree, what I do have is an absolute faith in the potential for success of RISC OS and the RISC OS '99 show is a case in point.

It has to be said that many of the exhibitors (and some will admit it even now) were convinced that this event would not be a good show. They would attend just to fly the RISC OS flag but would certainly make a loss and spend a fairly boring weekend looking after those attendees that you see at every show.

On the other hand I was convinced they were wrong, the RISC OS market is inherently optimistic – it has to be, we'd never have survived this long if we weren't – and there are very promising changes on the horizon (and some of those changes are very much closer than the horizon).

So I knew that the RISC OS people would flock to the show, willing to spend money on a market in which they can still see hope and potential.

That hope is fuelled by RiscStation (the machines should be shipping as you read this), Millipede, Microdigital, Cerilica, Spacetech – and all the rest who still support the machines, even if they don't feel the hope themselves. After all it's not easy staying in business when the market has shrunk as much as it has.

But we've had a year of bumping along the bottom and we didn't *quite* sink into the mud. It may take another year to rise to the surface where we can all breath more easily, but it can be done – we just have to do it.

So I'd like to thank you for not losing faith, as long as you're out there we'll be here. This is a great game we're playing and it is possible to win.

So let's win!

Steve Turnbull

Change of address

Don't forget *Acorn User* has moved:

Unit 2A, Heapriding Business Park, Ford Street, Stockport, SK3 0BT

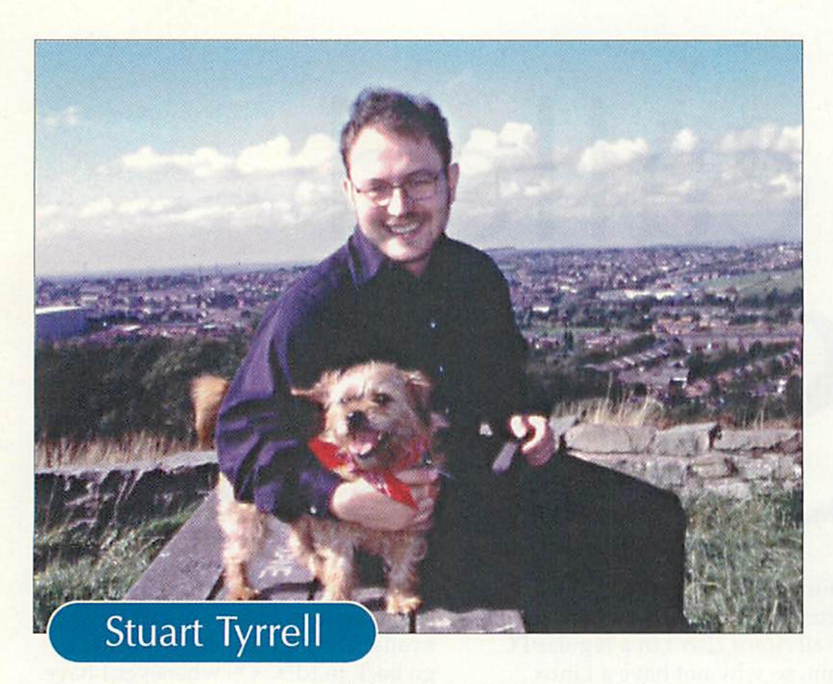
Tel: 0161 429 8902
Fax: 0161 429 0685

All e-mail addresses remain the same.

Contacting AU

letters@acornuser.com





Stuart Tyrrell

I like to think that part of the process of interviewing is to strip away the layers from people's personalities so they gradually reveal interesting things about themselves. Stuart Tyrrell was already familiar with the concept of stripping and layers; he had just got down to the original Victorian wallpaper on his partner Wendy's staircase. Tilly, the waggier one of their two rescue dogs, was there to give me a full-on doggy welcome.

Stuart Tyrrell is the proprietor of Stuart Tyrrell Developments. His words. I tell Stuart that the word "proprietor" fits in wonderfully with his surroundings – the foot of the Pennines just outside Shaw – and that he should have a dark, varnished, wood shopfront with gold lettering.

> You see I do a lot of Special Needs work as well which does not show up all that much in the Acorn world.

"Actually I work from home in the back bedroom at the moment," laughs Stuart, "which does sound a bit dodgy. I am very much a designer, a design engineer. I do the design work for the Special Needs stuff. I do a bit of fabrication, soldering and stuff like that, but I am actually shipping most of that out to other people so I concentrate on the design work. I am a bit of a jack-of-all-trades but 'design engineer' does nicely." Tilly begins to help me interview Stuart by joining in the conversation; apparently Tilly helps with anything that makes a noise.

It comes as no surprise to find out that for Stuart it all started in 1981 when his father got a ZX81, which Stuart hijacked, as he did subsequently with the Beeb and Archimedes. He then did Microelectronic Systems Engineering at UMIST and started a PhD but, in the time-honoured tradition of people in the Acorn market, got side-tracked.

"You see I do a lot of Special Needs work as well, which does not show up all that much in the Acorn world. I do a lot of work for SEMERC; I can't really say too much about it, but a large proportion of the hardware in the catalogue comes from me. Faced with the choice of finishing the PhD or continuing with the Special Needs work, I decided that I could not give up the Special Needs side of my life.

"I did a utility for the Acorns called *Serial Mouse* so you could use a PC serial mouse. I got a phone call out of the blue from Rod Boyes asking if he could distribute the program with some hardware. Then Rod moved to SEMERC and it just continued from there."

Wendy, Stuart's partner, now enters the room. She is Sister in Intensive Care Research and so is basically on call 24 hours a day, 365 days a year. She and I have a good old chat about Stuart. She jokes that if Stuart's job fails, she will throw him and Tilly out with matching knotted handkerchiefs.

"The problem with Stuart," jokes Wendy "is getting him to go anywhere. He is a boring git, although once you get him out he's fine and we have to go back to the same place for the next ten years. He gets very insecure if there is not a square thing in front of him. He likes shopping but he buys chocolate and rubbish and he comes back very excited with himself saying: 'Look what I've got… quilted toilet roll!' He loves his two-for-one at Iceland and his bargains. He gets that from his father; he is crazy, basically."

Stuart laments the fact that although he's doing a lot in the RISC OS market at the moment, much of it is concerned with new projects that he can't discuss at this time.

"There are exciting things happening in the RISC OS world. I am involved in a couple of projects which will become apparent, and there are a lot of things that the public do not know about. Things are a lot healthier than people have been led to believe. Watch this space but I cannot say much more to the point. I am doing work with other RISC OS developers but I cannot talk about it, I know what ideas they have and everything looks rosy."

I think we'll have to wait for time to strip away another few layers before we find out what Stuart means by this.

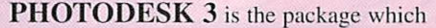
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New 2.5 Megapixel SLR camera

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C-2500L 1712x1368 NEW 2.5 megapixel SLR **£1199.99**

*PhotoLink is available free with cameras purchased from Spacetech or on its own, if you have purchased your camera elsewhere, at £69.00. RiscOS 3.5 and above only.

digital cameras

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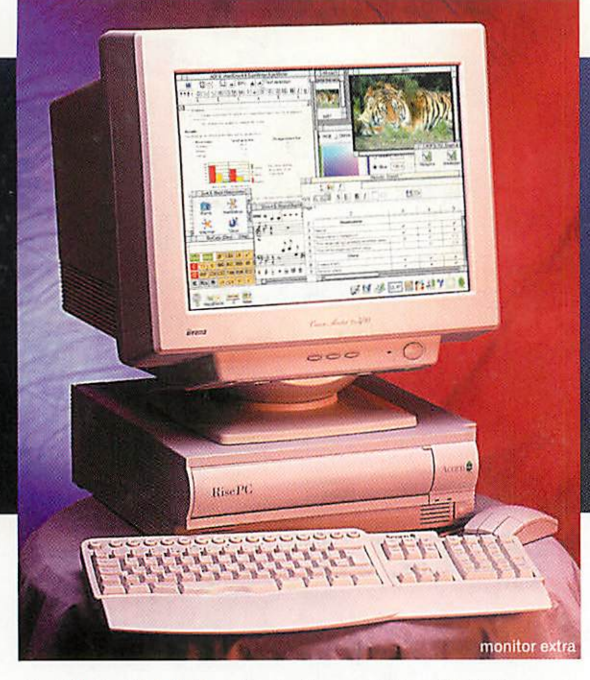
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